AUGUST, 1935

COTTON

Serving the

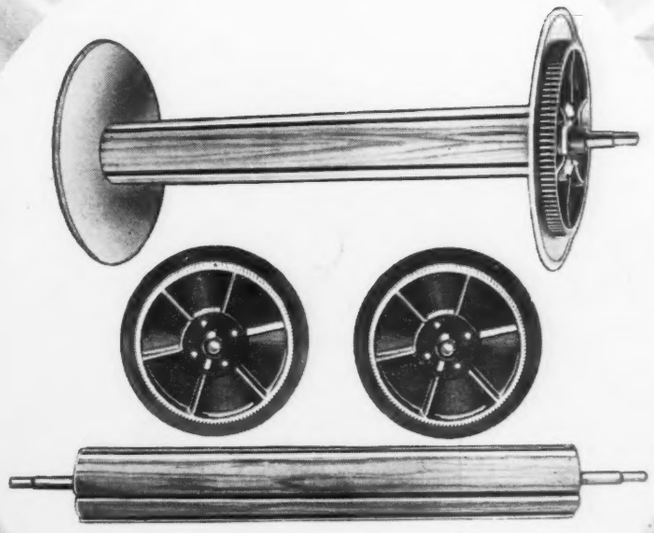
TEXTILE INDUSTRIES

BEAMS OF SATISFACTION

• WEST POINT •

LOOM BEAMS

BEAM HEADS • BEAM BARRELS



The barrels of West Point beams are made of thoroughly seasoned wood with journals of tough plow steel; all turned to exact size and length. When fitted with our high tensile strength cast iron or Etchison patented steel heads, there results a true running beam eliminating high and low places on edge of warp and consequent bad selvage.

To meet all conditions and for lasting service, beams equipped with our Etchison patented steel heads are recommended. To the mill requiring a beam that is practically indestructible, this is truly the "beam of satisfaction."

Etchison steel heads cost more than cast iron but are worth the difference!

Increase the efficiency of your looms by the use of West Point beams.

Also Manufacturers of

Special Machinery . . . Cloth Room Machinery . . . Spur, Spiral and Bevel Gears in Iron, Steel and Brass . . . Textile Machinery Repair Parts.

WEST POINT FOUNDRY & MACHINE CO.

(Batson-Cook Company, Owners)

WEST POINT, GEORGIA

Achievement IS BORN OF EXPERIENCE

IF YOU WANT THE FORMER, YOU MUST SEEK THE LATTER

The modern streamlined motor car was not born overnight. It is a product of 166 years of experience, including many costly mistakes as well as countless minor achievements. Likewise the present comparative perfection of Franklin Process Package Dyeing was attained only after 25 years of pioneering. It can not be duplicated overnight, nor without mistakes that are costly to all concerned; for unlike automotive experience, Franklin Process experience is not shared by the industry as a whole.

To match Franklin Process Achievement it is necessary to match Franklin Process experience, for this achievement is not a matter of machine performance alone. Package dyeing machines, correctly designed, are unquestionably a big advance over older types of yarn dyeing equipment. Nevertheless they have not eliminated the need of human knowledge and human ingenuity in the preparation and application of the dye liquor by the package dyeing method. It is a combination of mechanical and human superior performance, plus experience, that has brought Franklin Process to a position of leadership.

Custom Yarn Dyeing
Natural Yarns
Colored Yarns
Glazed Yarns
Dyeing and
Processing Machines

When you pay for colors of KNOWN fastness, advertise the fact. Use the Franklin Process Fast Color Label. Ask us about it.

Order or specify Franklin Process Colors and enjoy the benefits of Franklin Process EXPERIENCE. These benefits are very tangible and practical, consisting of superiority in penetration, levelness, fastness and economy. Don't judge Franklin Process Custom Yarn Dyeing by its performance 25, 10 or even 3 years ago. See what it can do for you TO-DAY.

We promise you immunity from EXPERIMENTS. While our pioneering is by no means over, all our experimenting is conducted in the laboratory. Manufacturing orders are filled only by tried and proved methods.

FRANKLIN PROCESS

ESTABLISHED 1910

Pioneers in Package Dyeing

PROVIDENCE • PHILADELPHIA • GREENVILLE • CHATTANOOGA • N. Y. REPRESENTATIVE, 40 WORTH ST.

COTTON is published monthly by W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga. Subscription Rates, United States and Possessions, $1.00 for one year; $2.00 for three years; Canada, $1.50 per year; Foreign Countries, $2.00 per year. Entered as second-class matter at the postoffice, Dalton, Ga., under the Act of March 3, 1879.

1935 Competition Needs 1935 Looms

X Model for E Model Weaves

X

C

XK Model with Dobby for Fancies in Rayon and Fine Cottons

Looms of the X Family Run 30 Picks Faster

C Model Shuttle Changing Looms for all Rayons

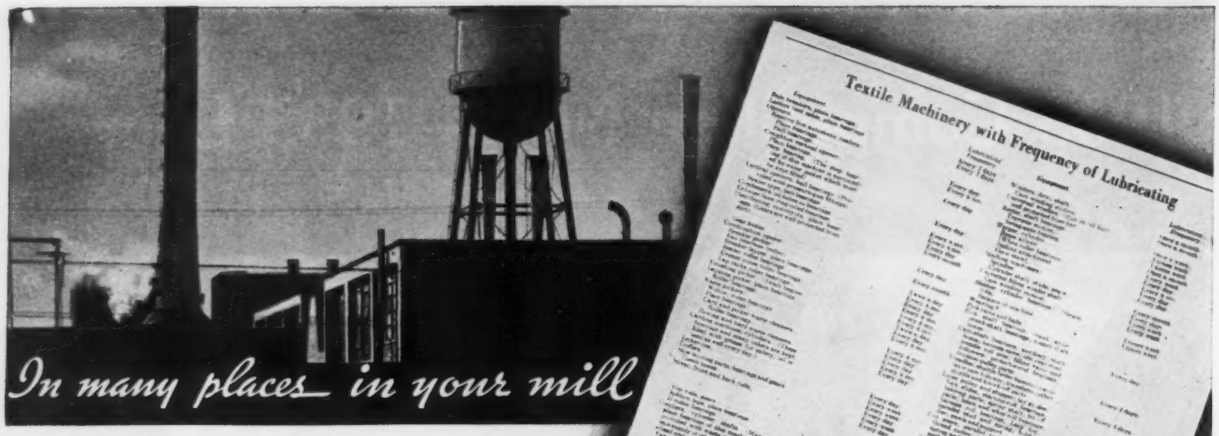
XK

XL Model for Broad Sheetings

XL

DRAPER CORPORATION

Atlanta Georgia Hopedale Massachusetts Spartanburg S C



STARFAK Leads the way to *Faster Operations* *Bigger Profits*

Pack your high-speed bearings with this new, longer-lasting lubricant, and forget bearing troubles.

Right through your plant, little savings will turn to big profits with this new lubricant. There are 154 places for Texaco Lubrication in the average mill. And in many of them STARFAK spells ECONOMY for lighter, high-speed ball and roller bearings.

Texaco STARFAK is an entirely new grease-type lubricant—the result of years of research. It is proved for you by bearing manufacturers, machinery builders, and by many of the country's leading textile mills.

Lower internal friction
Unsurpassed stability

Texaco STARFAK has solved a problem in high-speed bearing lubrication. It will not separate or break down. It stubbornly resists oxidation and gum formation and will not throw off.

The low internal friction and high lubricating quality of Texaco STARFAK, plus its unusual cohesive properties, make starting and running torque extremely low. This reduces power costs.

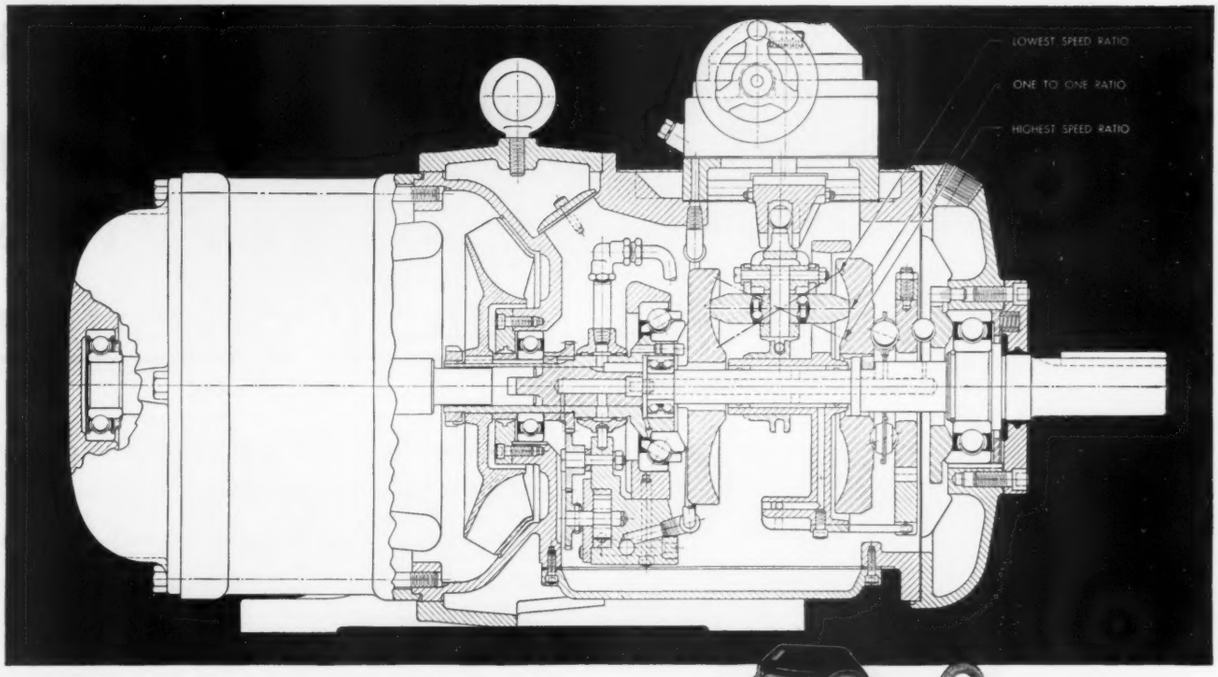
Longer bearing life, low costs

Check over the places in your plant where reduced wear, longer bearing life and savings in power are needed. Texaco STARFAK will give you these economies. Ask a Texaco representative to call and give you facts on how STARFAK will help to establish important economies in your mill.

THE TEXAS COMPANY
135 East 42nd Street • New York City
Nation-wide distribution facilities assure prompt delivery

TEXACO *tested* LUBRICANTS

REFINERY TESTED FOR UNIFORMITY • • • SERVICE TESTED FOR ECONOMY



TRANSITORQ

A truly simple highly efficient variable speed transmitter

● A constant speed electric motor and *infinitely adjustable speed* transmission combined in one exceedingly compact, fully enclosed unit.

Speed ratio 6 to 1. ▲ Positive drive under all conditions, including shock load, rapid reversing or extreme overload.

Speed may be selected before starting or changed while running. ▲ Time required to change up or down to any desired speed adjustable over wide range.

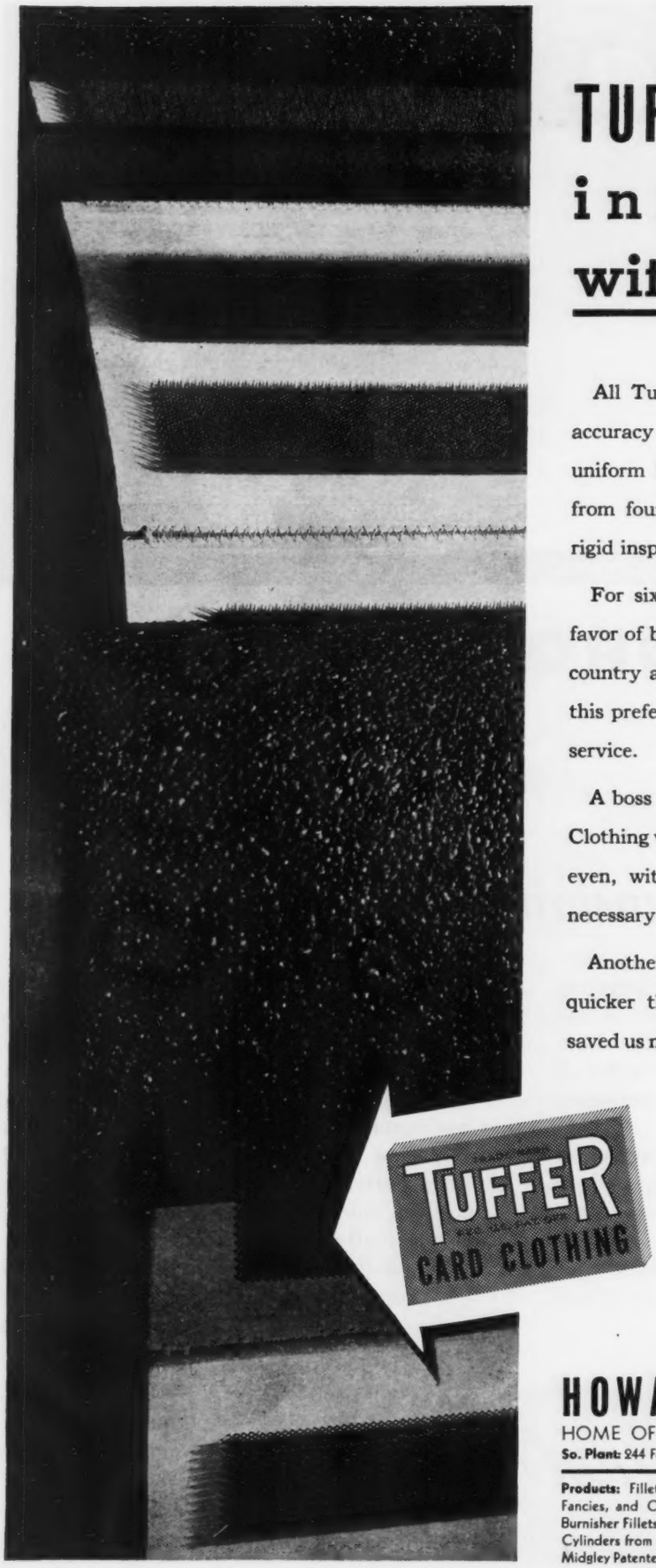
Automatically shifts to low-speed, high-torque position whenever stopped. Prevents overloading of motor when starting.

Speed control easily arranged to take care of machines requiring non-uniform or irregularly timed speed changes. ▲ Direct or remote fingertip control of speed for any kind of installation.

Adaptable to any mounting position, vertical or horizontal, sidewall, ceiling or floor. ▲ Completely New Departure Ball Bearing-equipped. Rolling parts inherently in balance, assuring long life, quiet operation and freedom from vibration at all speeds.

Built with any make of motor to suit individual requirements. Catalog PC upon request. The New Departure Mfg. Co., Bristol, Conn.

NEW DEPARTURE
Variable Speed
TRANSITORQ



Carders put TUFFER Clothing into service without grinding

All Tuffer Card Clothing is ground with extreme accuracy before shipment. Every Tuffer wire is at uniform height. Each material and each operation from foundation to shipping container is subject to rigid inspection.

For sixty-nine years Tuffer has been winning the favor of both cotton and woolen mills throughout this country and Canada. Two things are responsible for this preference: (1) Tuffer quality; (2) Howard Bros. service.

A boss carder says, "I never grind any Tuffer Card Clothing when I first put it on; it comes so uniform and even, with such an excellent point, that it is not necessary to grind it."

Another customer writes: "You get repair work to us quicker than expected, and your quick service has saved us many costly delays."

Perhaps some of your clothing needs to be replaced. Try Tuffer and find out for yourself why so many mills order and then reorder.

Write to the nearest Howard Bros. office for quick and dependable service.

HOWARD BROS. MFG. CO.

HOME OFFICE AND FACTORY: **WORCESTER, MASS.**

So. Plant: 244 Forsythe St., Atlanta, **Branch Offices:** Philadelphia, Dallas, Washington

Products: Fillets for Feed Rolls, Lickerins, Tumblers, Strippers, Workers, Doffers, Fancies, and Cylinders, Doffer Rings, Napper Clothing, Strickles, Emery Fillets, Burnisher Fillets, Top Flats Recovered and extra sets loaned, Lickerins and Garnett Cylinders from 4 to 30 inches and Metallic Card Breasts Rewired at Southern Plant. Midgley Patented Hand Stripping Cards and Inserted Eye and Regular Wire Heddles

A MODERN FABLE ... with a Happy Ending

A SALES YARN mill found itself unable to make quality yarns at a COST that would LET THEM OUT. 30's carded ply yarns were manufactured by MORE MODERN MILLS at a price that permitted them to UNDERSELL. .

This mill was not LONESOME. It had plenty of COMPANIONS who were LOSING MONEY. But this did not make them so HAPPY, and they thought SOMETHING OUGHT TO BE DONE about it. So they called in sales engineers to DISCUSS WAYS and MEANS. .

Because they had an OLD FASHIONED IDEA about giving the customer a BREAK, they decided to use the same staple and character of cotton. So they called for a NEW DEAL. As they did their own SHUFFLING, there were no LOOSE ACES in anybody's SLEEVE. . .

They made a careful REORGANIZATION, with lighter carding, larger roving packages, new, wide gauge spinning with long draft, and larger twister packages. By rearranging their MACHINERY, they were not obliged to add any NEW BUILDINGS. IN NO TIME AT ALL they were operating on the NEW BASIS. .

After three months they reported CLEANER and MORE EVEN card sliver. One-quarter of the roving spindles were DONE AWAY WITH, but the spinning creels were furnished with LARGER and MORE EFFICIENT roving bobbins. Their YARN PRODUCTION was 45 per cent GREATER, with only 21 per cent more spindles, and they put 69 per cent more yarn on the spinning bobbins. . . . . .

Speed of the front rolls on their spinning was 30 per cent GREATER than BEFORE. .

The DIRECT and INDIRECT LABOR COST was reduced 40 per cent. . . . . .

Their OVERHEAD was cut by 45 per cent. .

The breaking strength of their yarn was increased 5 per cent and was much more EVEN.

In other words, the mill is now in a position to STAY with the MARKET. They have SOMETHING TO BITE ON, while waiting for the MORE ABUNDANT LIFE to gelatin, which doesn't make them TOO UNHAPPY. . . .

And as every good story must have a MORAL, but without personal reflections on our very good friends who could SEE a GOOD THING, here it is: . . . . . .

"They said it couldn't be done; but he, poor fool, didn't know it, so he went ahead and did it."

WHITIN MACHINE WORKS

CHARLOTTE • WHITINSVILLE, MASS. • ATLANTA

NOW

is the proper time

Now, while business is slow, is the proper time to put all textile machinery in tip-top condition. Now is the time to complete your stockroom with all needed repair parts. Now is the time to insure low maintenance costs during the high production times that are sure to come.

HENDERSON

REPAIR PARTS

fit better, perform smoothly and last longer. This is due to long experience in textile equipment design and knowledge of weak points in present-day equipment, combined with precision patterns, skilled workmen and quality materials.

Let HENDERSON help you NOW to put your equipment in efficient and trouble-proof condition. Ask for prices.

HENDERSON FOUNDRY
& MACHINE WORKS
HAMPTON, GEORGIA

Joanna Cotton Mills
Goldville, So. Carolina

Lockwood Greene Engrs. Inc.
New York Boston
Spartanburg

"Hard Maple Flooring--The Standard Flooring Material For The Textile Industry."

WHETHER you're building a new mill or remodeling the old, the service records of Northern Hard Maple will *prove* what flooring is best for you to use. For in countless mills, where flooring must fill many difficult requirements, Maple floors laid many years ago are still serving their owners with complete satisfaction.

Northern Hard Maple is tough-fibred, tight-grained, resistant to abrasion, lastingly smooth. Will not sliver, splinter or develop ridges—even when subjected to the wear of heavy, rolling trucks with steel casters. Hard Maple actually outwears stone!

It is warm, dry, resilient, comfortable beneath the feet. Reduces fatigue. Simplifies plant alterations—creates no dust injurious to the bearing surfaces of machinery.

Hard Maple is remarkably easy to keep clean and free from lint—requires only brushing. Whether you floor with blocks or strips—with or without pattern—over wood or concrete sub-floors, or over your present floor—Northern Hard Maple will provide a floor that endures and satisfies.

Write for grading rules and complete specifications for laying and finishing MFMA Maple Floors.

"All top floors in the Joanna Cotton Mills at Goldville, So. Carolina—a modern plant for the production of shade cloth muslins—are of Maple, selected because of its wearing qualities under hard service, comfort for employees, easy cleaning, and simplicity in making repairs or changes.
The many excellent qualities of Hard Maple Flooring have made it the standard flooring material for the textile industry."
LOCKWOOD GREENE ENGINEERS, INC.
By S. B. Lincoln
Vice-President

New, penetrating heavy-duty finishes

Seal the surface. Keep out dirt. Resist soil stains. Eliminate scrubbing. Non-slippery. Will not mar, scratch or flake off. Also preservative types which resist the effects of dampness.

★

YOUR LOCAL LUMBER DEALER WILL SUPPLY YOU

with trade-marked MFMA Maple Flooring—product of the following manufacturers licensed to use the Association trade-mark MFMA:

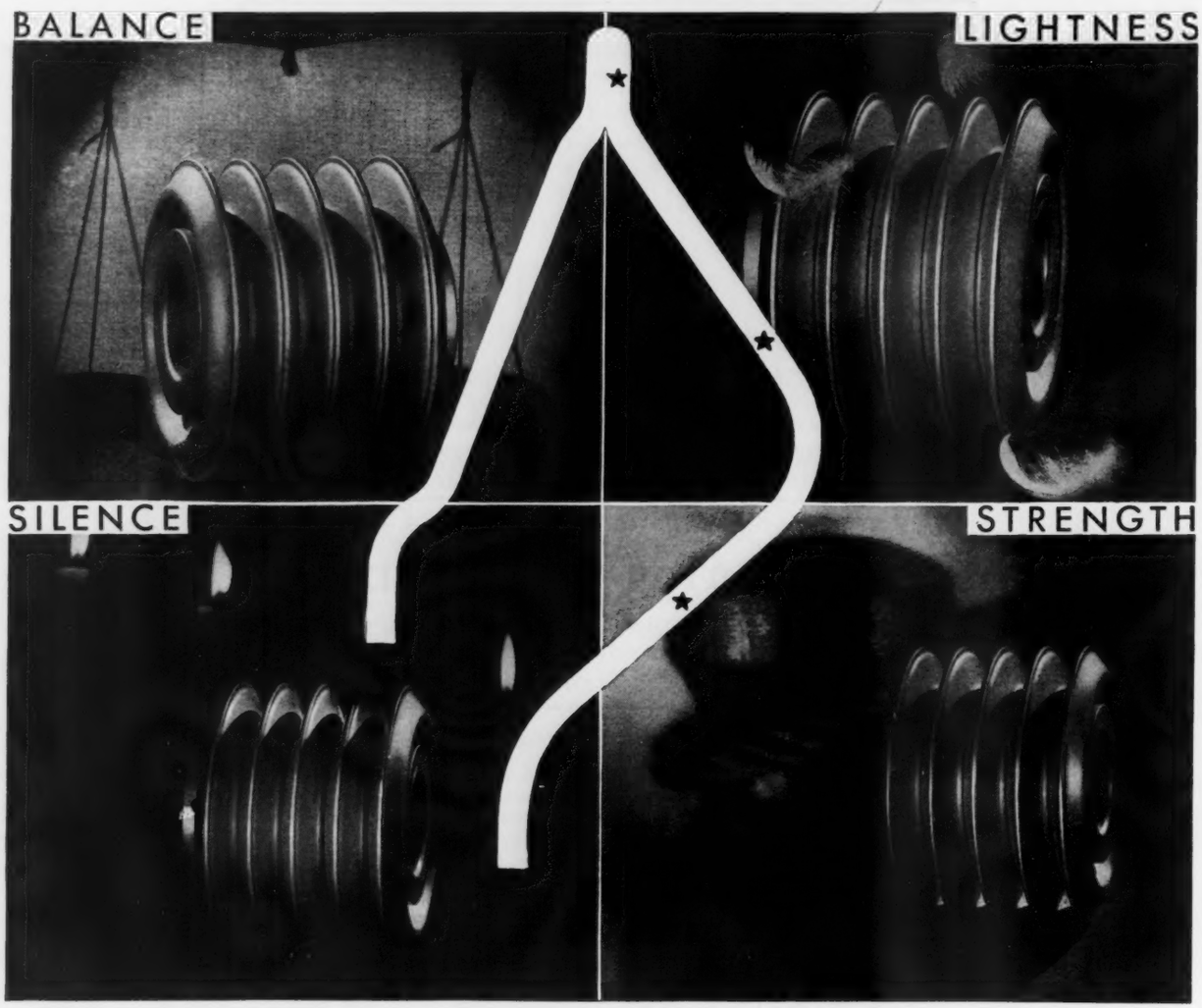
Beck, August C. Company Milwaukee, Wis.
Brown Dimension Company, Manistique, Mich.
Bruce, E. L. Company Memphis Tenn.
(Mill at Reed City, Mich.)
Cobbs & Mitchell, Inc. Cadillac, Mich.
Connor Lumber & Land Company, Laona, Wis.
(Sales Office, Marshfield, Wis.)
Cummer-Diggins Company Cadillac, Mich.
Farrin Lumber Co., M. B. Cincinnati, Ohio
Holt Hardwood Company Oconto, Wis.
Kerry & Hanson Flooring Co., Grayling Mich.
Kneeland-Bigelow Company Bay City, Mich.
Mitchell Brothers Company Cadillac Mich.
Northwestern Cooperage & Lumber Co.
Gladstone, Mich.
Oval Wood Dish Corp. Tupper Lake, N. Y.
Robbins Flooring Company, Rhinelander, Wis.
Sawyer Goodman Company Marinette Wis.
Stephenson Company, I. Wells, Mich.
West Virginia Pulp & Paper Co., Cass, W. Va.
Wells, J. W., Lumber Co. Menominee, Mich.
Wisconsin Land & Lbr. Co., Hermansville, Mich.
Yawkey-Bissell Lumber Co., White Lake, Wis.

MAPLE FLOORING MANUFACTURERS ASSOCIATION
1794 McCormick Bldg., Chicago, Illinois

See our advertisement Sec., 15/50 in SWEET'S. Let our service and research department assist you with your flooring problems. Write us.

Floor *with* Maple

The letters **MFMA** on Maple, Beech or Birch Flooring signify that the flooring is standardized and guaranteed by the Maple Flooring Manufacturers Association, whose members must attain and maintain the highest standards of manufacture and adhere to manufacturing and grading rules which economically conserve these remarkable woods.
This trade-mark is for your protection. Look for it on the flooring you use. . . . **MFMA**



SMOOTH, SILENT STAMINA

Great strength coupled to extreme lightness; permanent accuracy of balance, both static and dynamic; and, in operation, as silent as burning candles . . . those are some of the advanced and exclusive features that you purchase in Duro-Brace Texsteel Drives. • The outside walls of these sheaves are braced by convex steel plates, which so greatly increase their strength as to eliminate distortion, even under extreme overloads, thus permanently preserving the accurate, vibration-eliminating balance with which they leave the factory. They are the lightest sheaves on the market in relation to their great strength. • In addition, they are 98.9% efficient, slipless, shock-absorbing, require no belt-dressing or lubrication and are not affected by dirt or moisture. • Mail us a card asking for Bulletin No. 2188, which sets forth the advantages that Duro-Brace Texsteel Drives offer you in all matters of power transmission.

Former Design: cross-section showing unsupported outside plate.

★ ★ ★

New Duro-Brace Design: cross-section showing outside plate braced by a convex reinforcing steel plate.

TEXROPE DRIVES

ORIGINATED BY ALLIS-CHALMERS

ALLIS-CHALMERS MFG. CO. MILWAUKEE, WISCONSIN

For MEN WHO WANT FIGURES *and Men Who Want Facts*

High speed coning and warping with the Universal System presents the following advantages over slow speed warping:

Operator's productive time increased. Because of uniform yarn speed winding operators have less walking time and higher production than spooler hands.

Yarn waste reduced. Wooden cones eliminate waste caused by damaged spools and last indefinitely.

Better weaving. Uniform winding speed and minimum tension allow yarn to retain its natural elasticity.

Low maintenance cost. Simple construction of winder with its rotating traverse keeps maintenance down to about $50.00 a year or less on a $10,000 investment.

Less handling. Large 4-lb. cones instead of small 1-lb. spools save 75% of trucking and creeling costs.

No dead yarn. The magazine cone creeling system provides fresh yarn and reduces inventory.

Perfect selvedges. Fixed position of beam on the warper assures perfect selvedges.

No lost and crossed Ends. Electrically-controlled stop motion and powerful brake on the warper prevent lost and crossed ends in the loom beam.

Better sizing. Longer yardages at the slasher and more uniform sizing because of the elimination of stops.

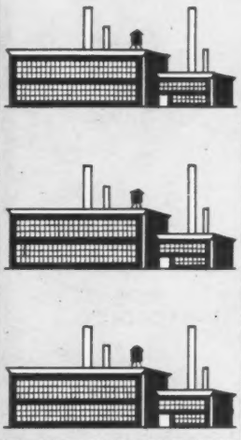
Beams run out uniformly. Yardage clock is geared to large high speed driving drum—less waste because beams run out uniformly.

Would you like to have these facts interpreted into terms of your mill's operating requirements? Write Dept. A, Boston.

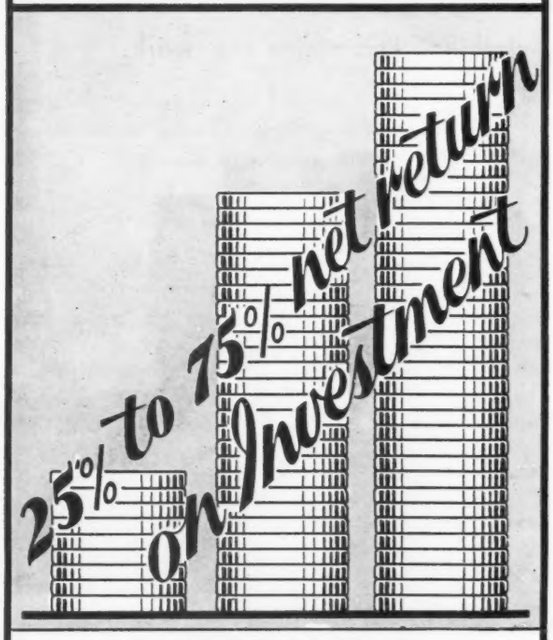
UNIVERSAL WINDING CO.
BOSTON

PROVIDENCE --- UTICA --- SPRINGFIELD --- NEW YORK --- PHILADELPHIA
CHARLOTTE --- ATLANTA

IN 3 OUT OF 4 MILLS



UNIVERSAL
HIGH SPEED
CONING AND WARPING
OFFERS
More RETURN
ON *Investment*
THAN ANY
COMPARABLE SYSTEM



WHEN REPLACING
SLOW SPEED WARPING
WITH UNIVERSAL SYSTEM OF
HIGH SPEED CONING AND WARPING

UNIVERSAL
High Speed Coning and Warping

1740

SOME OF THESE SHOULD ALWAYS BE ON HAND IN EVERY COTTON MILL SUPPLY ROOM

Clean! Quiet! Cool!

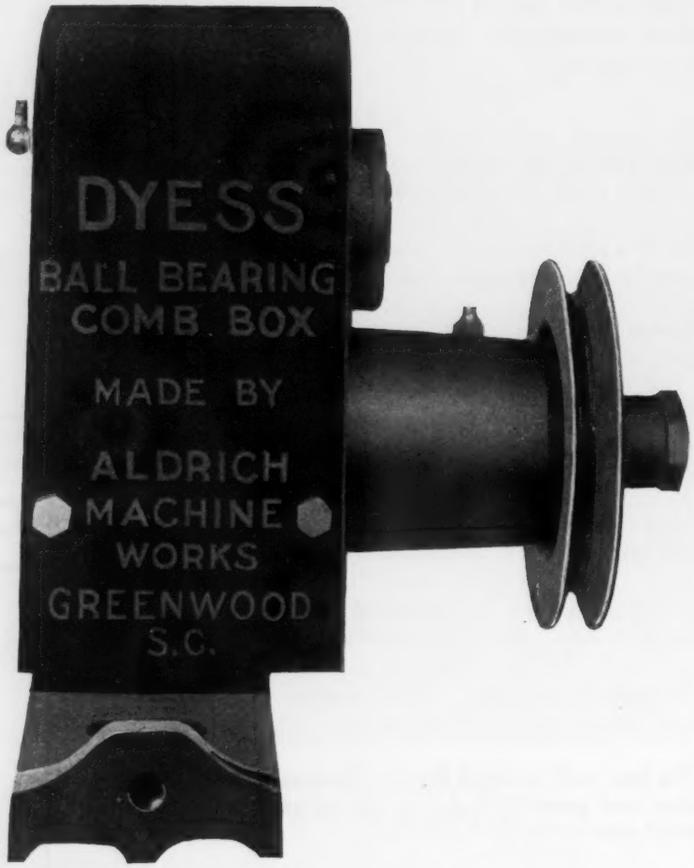
No Drip - No Spatter - No Rattle

▼

Old, worn-out comb boxes waste oil and are a constant expense.

Their perpetual dripping of oil on the floor is a menace to safety.

Their spattering injures the card clothing, and stains the work.



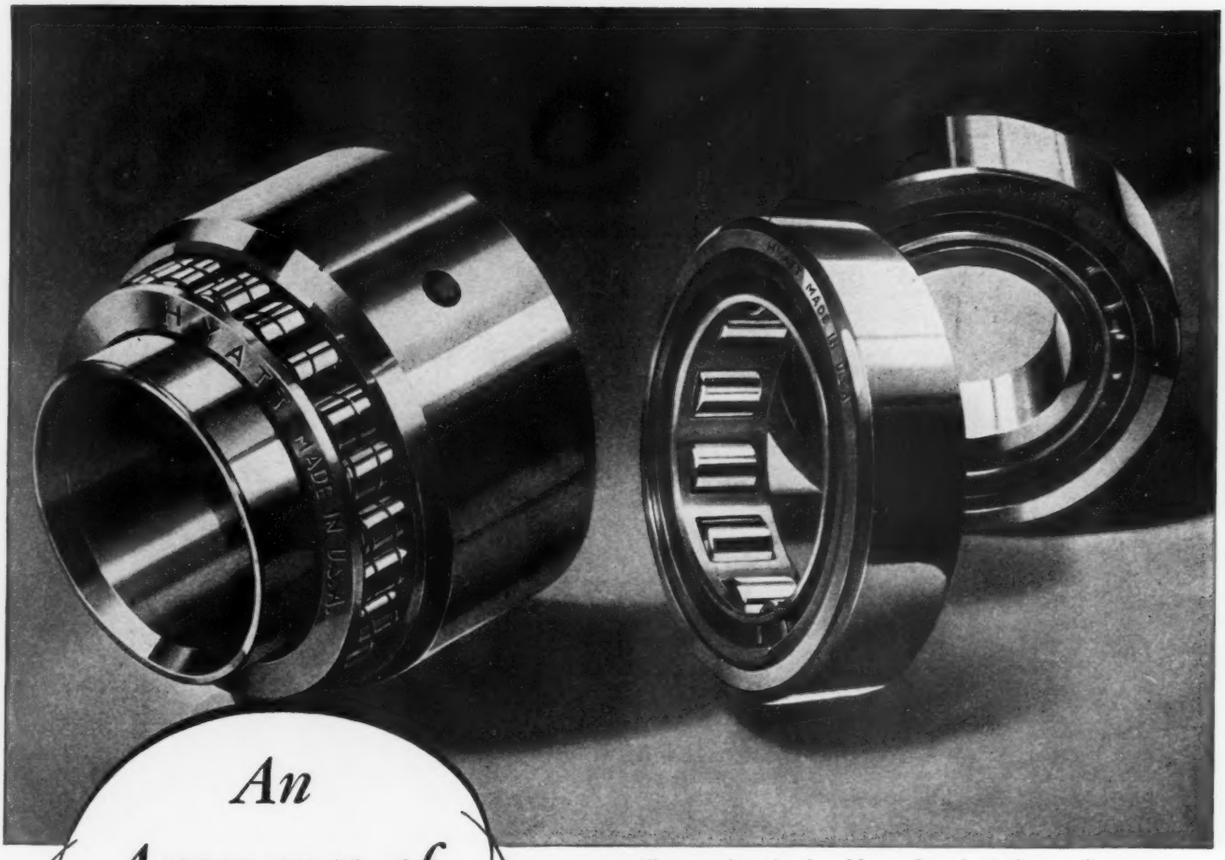
Dyess Comb Box with cover removed

Replace them with new ball bearing comb boxes kept on hand always in the supply room.

Made by

AldricH MachinE

Greenwood, **WorkS** South Carolina



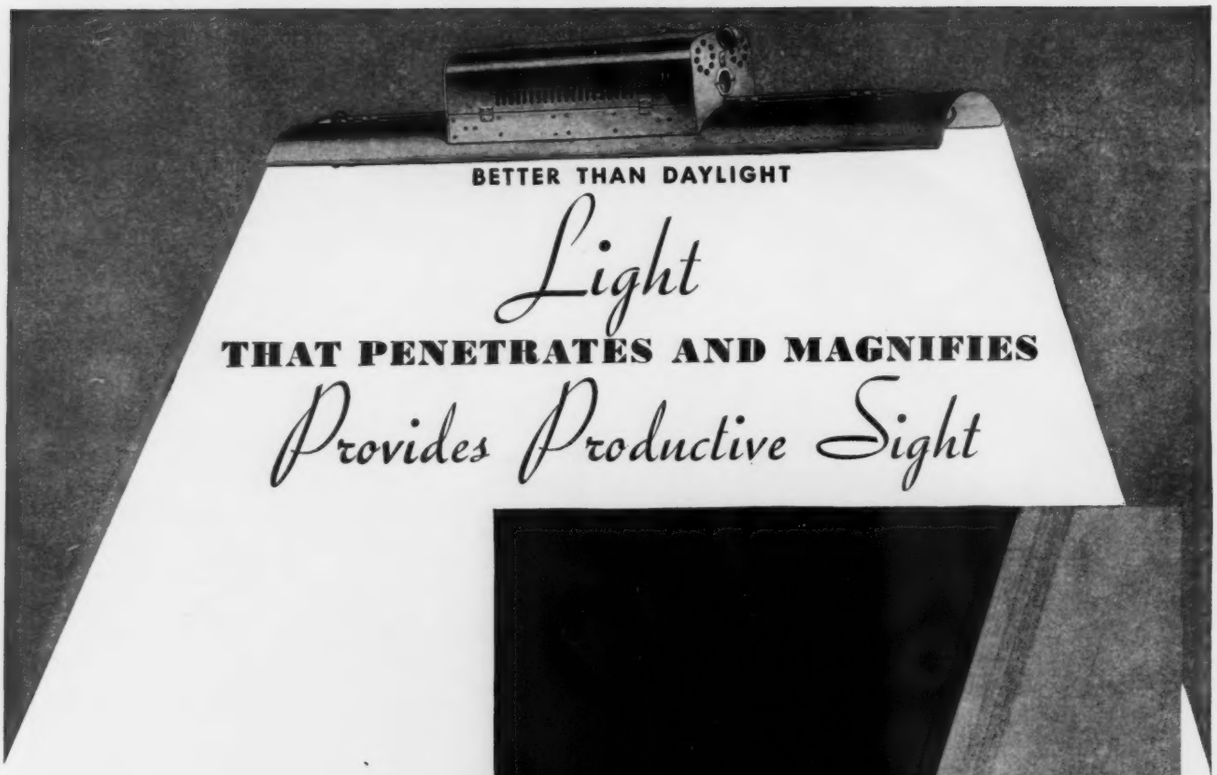
An Assurance of Better Operation

Illustrated with the Hyatt Standard Series Bearing employing the helical type wound roller is the Hyatt HY-LOAD Solid Roller Radial Bearing. There is a size and type of Hyatt Roller Bearing for every application. Details on request.

Wherever installed in looms, preparatory or finishing machinery, Hyatt Roller Bearings provide protection where it is most needed, eliminate bearing wear and care, and help produce more and better cloth at less cost.

No matter what their application, Hyatt Roller Bearings go on serving and saving even under the most extreme operating conditions. That's why more and more of these durable and dependable bearings are employed each succeeding year in textile service. Hyatt Roller Bearing Company, P. O. Box 476, Newark, New Jersey.

HYATT
ROLLER BEARINGS
PRODUCT OF GENERAL MOTORS



BETTER THAN DAYLIGHT

Light

THAT PENETRATES AND MAGNIFIES

Provides Productive Sight

Productive sight makes rejects few and far between. Each thread is clearly defined, so distinct as to seem magnified when the penetrating, glare-free light of Cooper-Hewitts is used. Tieing broken ends, threading reeds, in fact every operation up to and including inspection is effortless, accurate and fast when this nearest approach to continuous noon daylight from the north illuminates the mill.

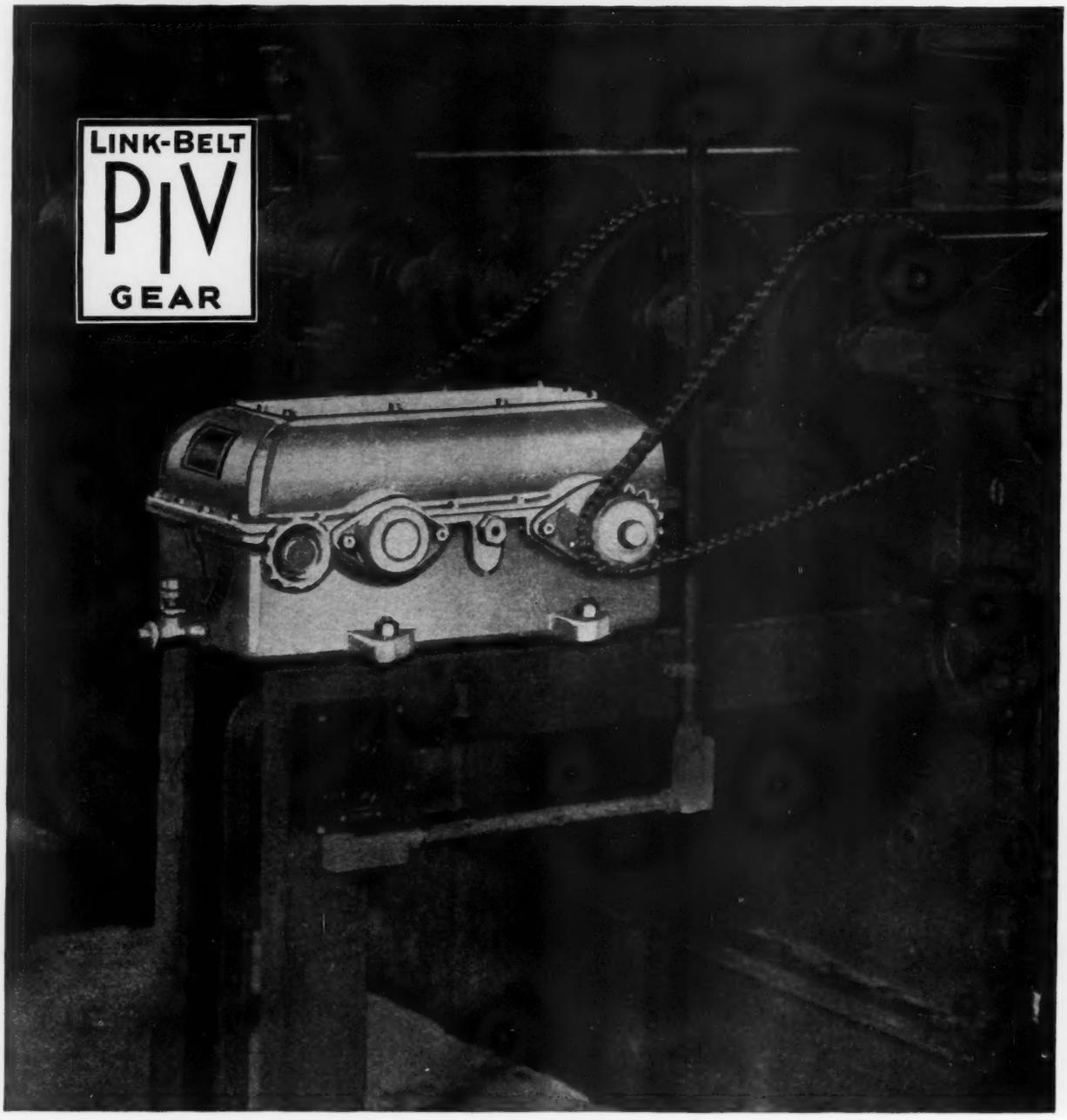
Reduced spoilage, reduced labor turnover and more uniformly better fabrics during day and night production alike . . . are a few of the benefits of working under "better than daylight" illumination, and its operating costs no more than equal intensity of other light. Cooper-Hewitt Mercury Vapor Light is truly a most profitable production tool.

Full details on how this light can serve you as a production tool can be had by writing to the General Electric Vapor Lamp Company, 853 Adams Street, Hoboken, New Jersey.

GENERAL ELECTRIC VAPOR LAMP COMPANY

644 Copr. 1934, General Electric Vapor Lamp Co.

POSITIVE INFINITELY VARIABLE SPEED TRANSMISSION



Fractional-revolution speed changes at mere turn of handle.

Any speed obtained instantly and maintained positively.

Accurate speed control through toothed contacts which do not permit slippage.

Remote control, and semi-automatic or fully-automatic control, when desired. Catalog 1274 on request.

LINK-BELT COMPANY

5303

The Leading Manufacturer of Positive Power Transmitting Equipment

Philadelphia Indianapolis Atlanta Chicago San Francisco Toronto Boston New York Baltimore Dallas New Orleans Offices in Principal Cities

Every Hour on the Hour

■ Typical! Adjacent to Chicago's loop with its scores of skyscrapers—Crane's service knows no 8-hour day. At night, every hour on the hour, a watchman arrives at the entrance to admit loop maintenance men seeking parts, valves, and fittings for their respective buildings.

Maintenance men can tell you better than we can the advantages of a completely Crane-equipped plant, with instant interchangeability of many parts, constant, ever-ready supply, absolute uniformity, and the money-saving, worry-saving feature of one responsibility for every part of the plant piping.

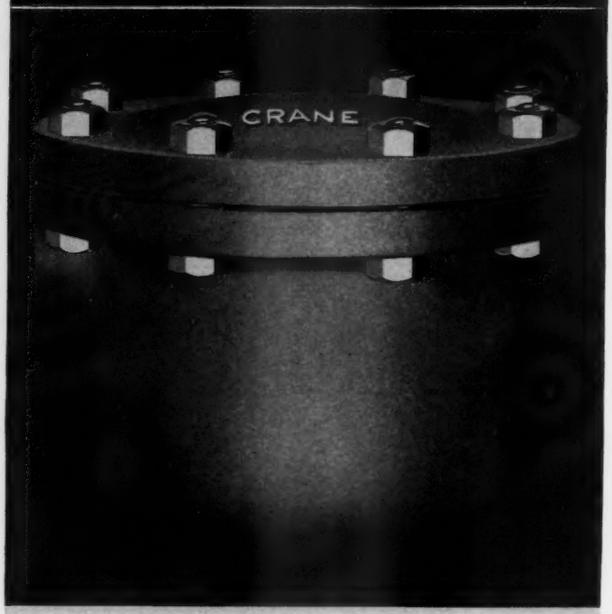
With Crane valves, fittings and fabricated piping you have uniform reliability. And this grows more important each day as production increases, and there is a vital need to "keep going" in response to demand.

CRANE SHOP FABRICATION SERVICE

Design	Flanging
Casting	Cutting
Bending	Threading
Welding	Assembling

There is a Crane Valve or fitting for every piping requirement

HIGH CAPACITY



Crane No. 981 Inverted Open Float Trap

1 Compact, efficient and has high capacity per unit cost.

2 Has few parts and they can be quickly removed from the trap without disconnecting any piping.

3 Materials of all parts specially selected for the work each part performs.

4 Entire cycle of operation is practically instantaneous, eliminating wiredrawing.

5 Similar trap designs made by Crane in ferro-steel and cast steel.

CRANE VALVES, FITTINGS and PIPE FABRICATION

CRANE CO., GENERAL OFFICES: 836 SO. MICHIGAN AVE., CHICAGO, ILL. • NEW YORK 23 W. 44TH STREET

Branches and Sales Offices in One Hundred and Sixty Cities

RAPIDASE

REDUCES VARIATION

..Variations in piece goods dyeing, bleaching and finishing are often due to the use of impractical desizing agents or methods.

.. RAPIDASE removes all ordinary cotton and rayon sizing materials quickly, safely and at extremely low cost.

DYEING
BLEACHING
FINISHING

THE ENZYMATIC *All-purpose* DE-SIZING AGENT!

WALLERSTEIN CO.
INCORPORATED
171 MADISON AVENUE
NEW YORK CITY

FRICTION

FRICTION is one great source of waste in the operation of textile machinery—waste of power, time and money.

The cost of proper lubrication is small, yet other much larger costs (power, maintenance and repair) are dependent upon it.

Insure the continued efficient performance of your machinery by reducing frictional resistance with Standard Oil lubricants.

Standard Oil has scientifically developed the correct type of lubricants designed to REDUCE friction in your plant.

●

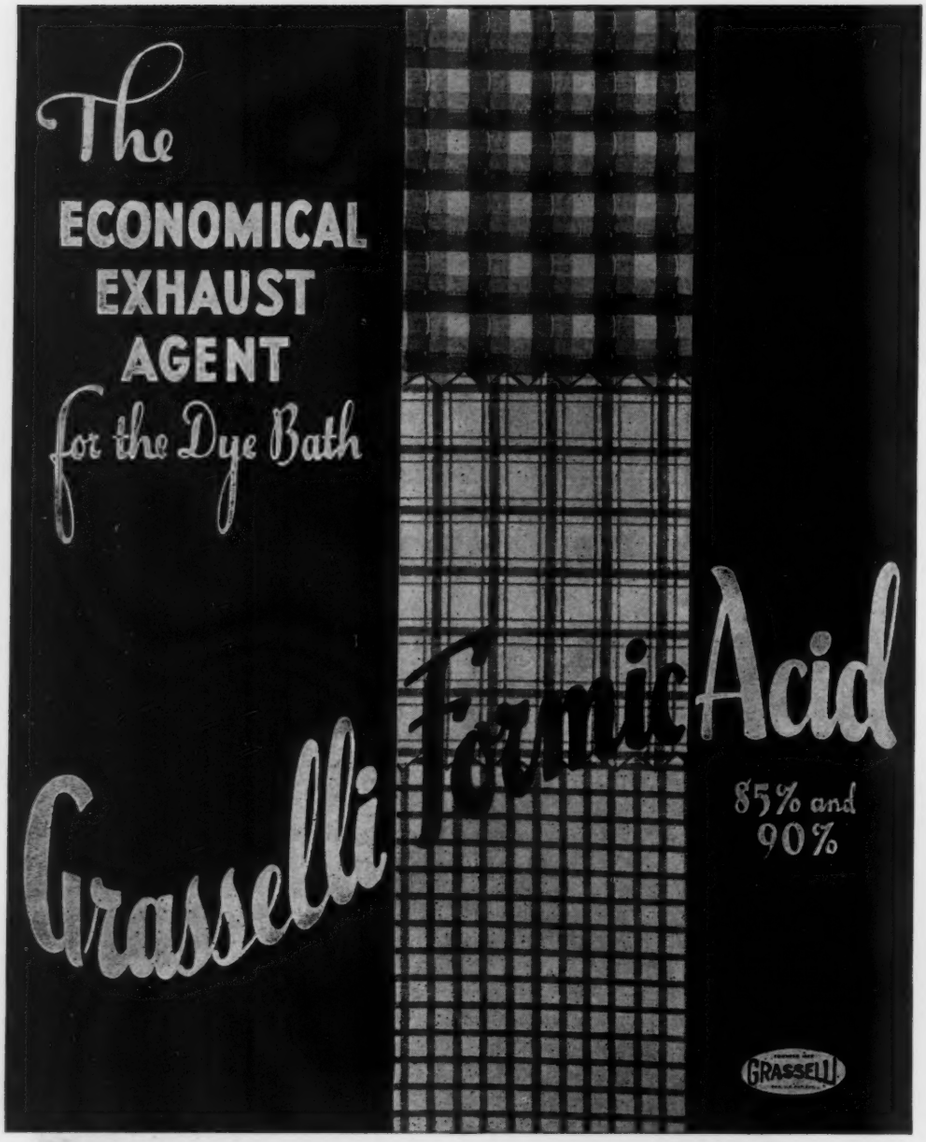
STANDARD OIL COMPANY

INCORPORATED IN KENTUCKY

Principal Offices:

ATLANTA, GEORGIA
BIRMINGHAM, ALABAMA
JACKSON, MISSISSIPPI
JACKSONVILLE, FLORIDA
LOUISVILLE, KENTUCKY
TAMPA, FLORIDA

IN THE SPOTLIGHT
STEIN HALL
WARP SIZING
STARCHES
VELVEEN XX STARCH
HAWK THIN BOILING STARCH
SILVER MEDAL PEARL STARCH
R. A. POTATO STARCH
N. F. PEARL STARCH
N. F. POWDERED STARCH
STEIN, HALL & COMPANY, INC.
EST. 1866
285 MADISON AVENUE NEW YORK CITY
BOSTON PROVIDENCE CHICAGO PHILADELPHIA CHARLOTTE SAN FRANCISCO
TORONTO ROCHESTER BUFFALO LOS ANGELES
SH
HEADQUARTERS FOR ALL TEXTILE STARCHES, DEXTRINES, GUMS AND TAPIOCA FLOURS



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in commenting on exhibits at the Greenville Show where the REEVES Spinning Frame Drive was displayed:

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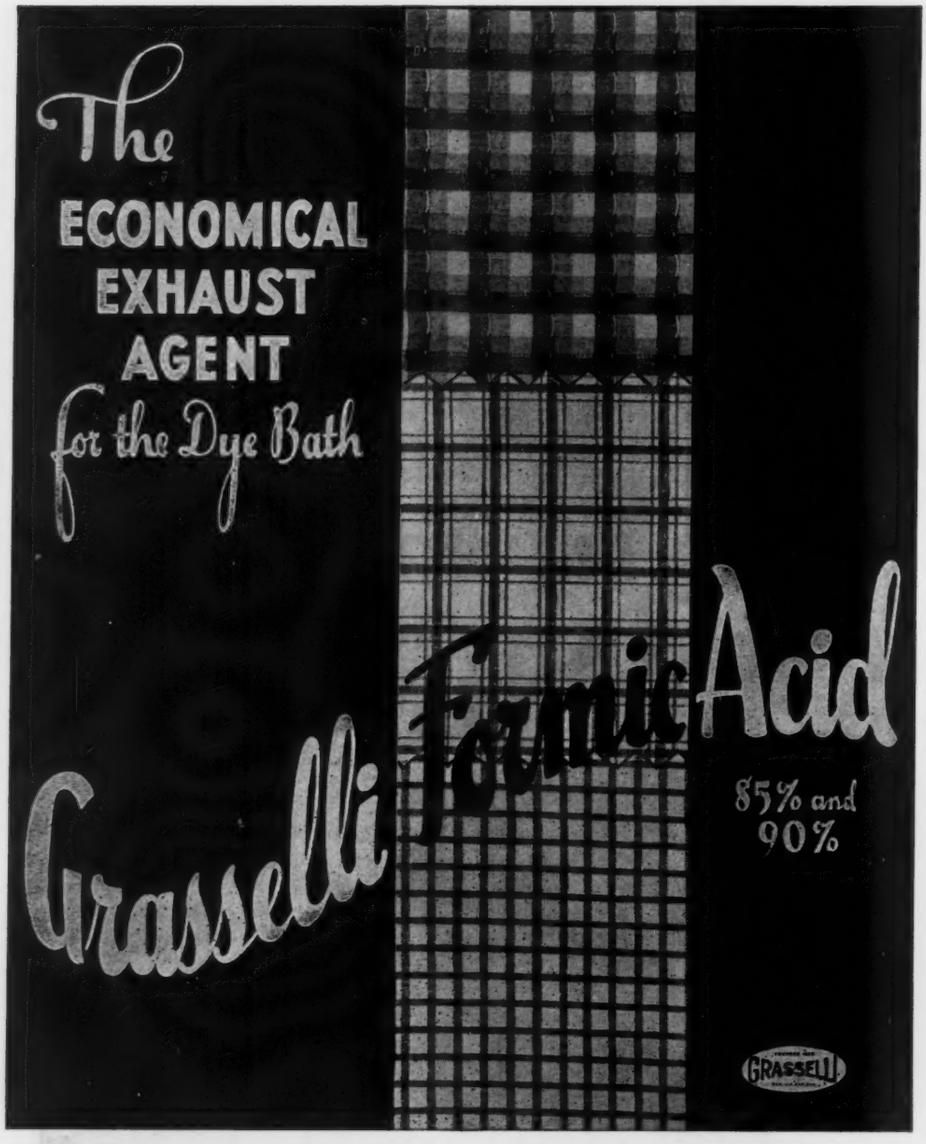
● **Illustrated: latest model REEVES Spinning Frame Drive with adjustable motor base and V-belt drive.**



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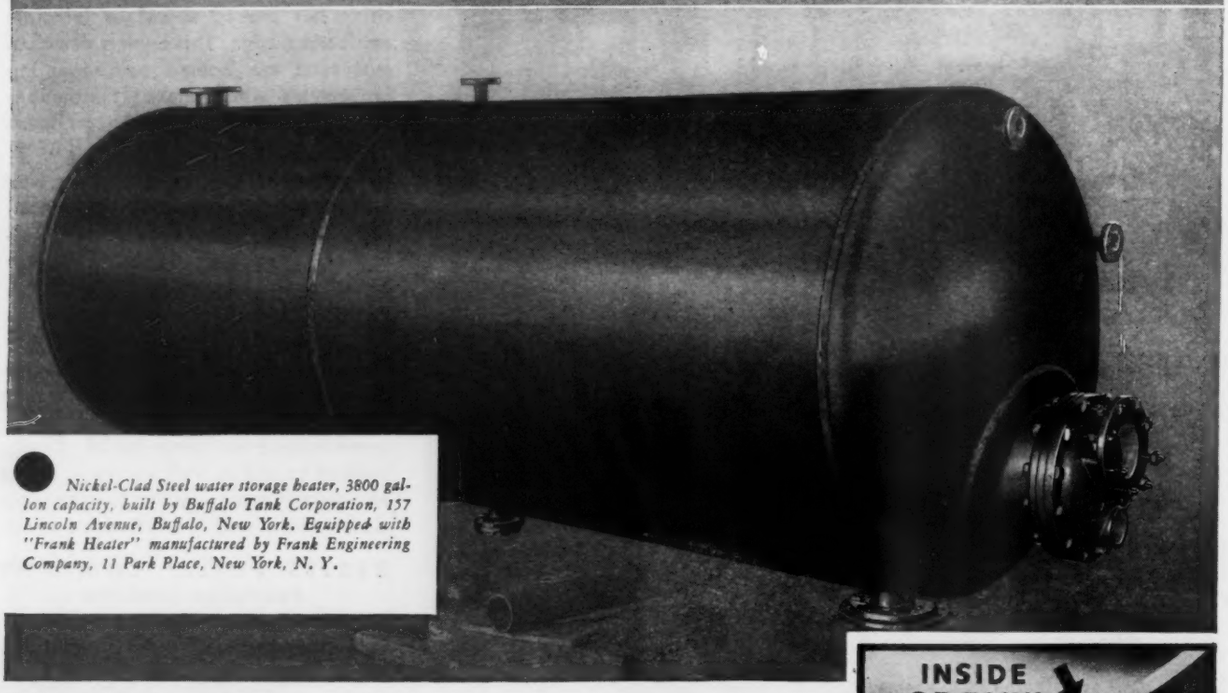

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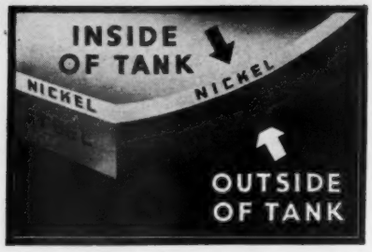

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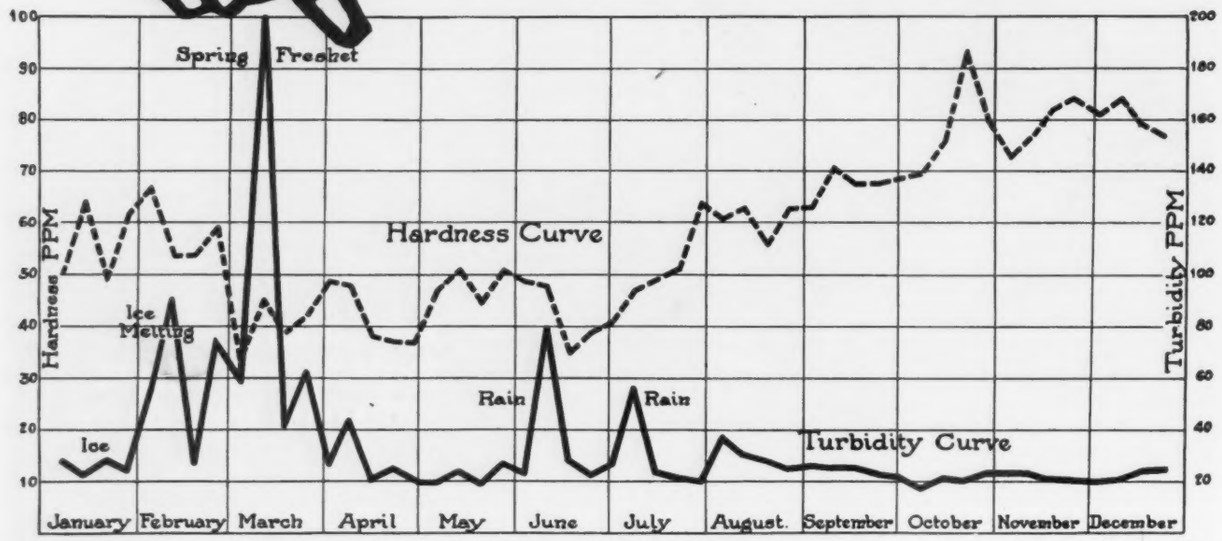

● The biggest competitor of the textile manufacturer is his own water supply, and it's surprising how many mill owners overlook this fact.

The trouble is that untreated supply water is never constant in its quality. It varies in hardness and turbidity according to seasonal rains, droughts, and freezing conditions. The chart shows these variations in a typical river supplying water to a greater number of important textile mills.

It is easy to see how the sudden peaks of hardness or turbidity will lower the efficiency of mill operation and reduce the quality of finished goods. And no manufacturer can take this risk with competition as strong as it is today. He must be sure of a constant supply of clear, soft, colorless water for wet-process cleansing, and dyeing. And the only way to have such water is to treat it first.

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And the many benefits of this conditioned water continue year after years. There are fewer reruns and rejections. Soap, soda, and bleach are saved. Boiler tube repairs and replacements are reduced to a minimum. There is less yarn breakage. And finished goods are softer to the touch . . . and have no "hungry" spots in dyeing.

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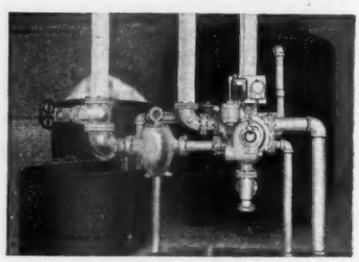

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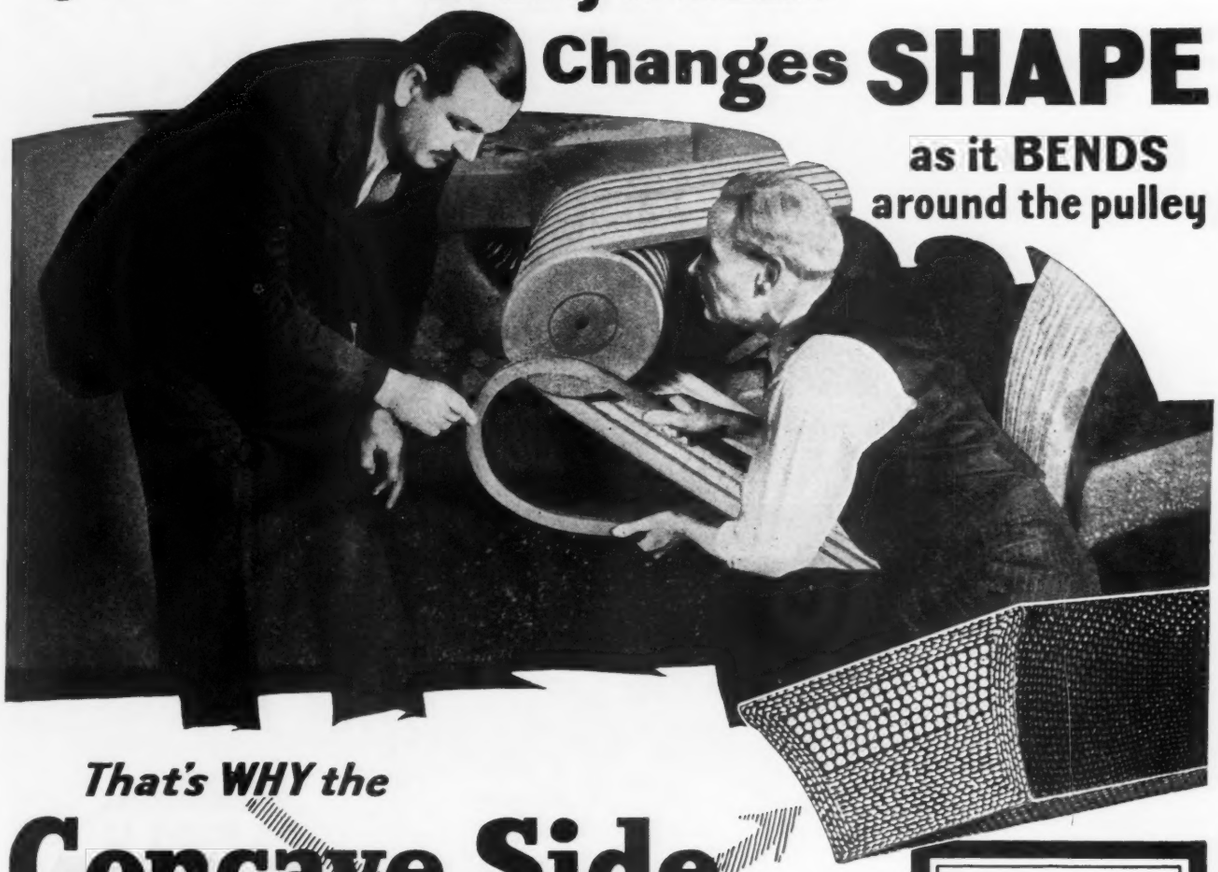
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Concave Side is a Money Saver

Bend *any* V-belt and here is what you find:— The top, under tension, will *narrow*. The bottom, under compression, *widens*. By these changes, a *straight*-sided V-belt is forced to assume in its sheave groove the shape shown in figure 1 (right). Note the out-bulge of the sides.

Now look at figure 2. There you see that the *same* shape-change merely *straightens* the concave side. There is *no* side-bulge. This saves money in two ways: (1) You get *uniform* side-wall wear, *longer life!* (2) The full side wall grip on the pulley carries heavier loads without slippage—a real saving in power consumption.

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WHAT HAPPENS *When a* V-Belt **BENDS**

Fig. 1. *Straight-Sided Belt*

Fig. 2. *Belt with Patented* CONCAVE *Side*

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Editor

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COTTON

Contents for AUGUST, 1935

A Topical Cross-Index of the articles published in COTTON during 1934 (Volume 98) is available upon request to readers who have a complete file of the magazine for that year. Due to a limited supply of copies, we cannot promise to supply copies of any of the issues of the magazine published during that year . . . . . .

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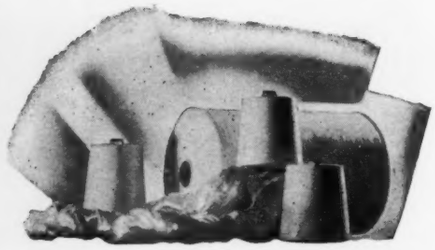

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Vol. 99
No. 8

COTTON

August,
1935

The Status of the Processing Tax

August 1, 1935.

THE general confusion and inactivity in the cotton textile goods markets has been brought about largely by the uncertainty that exists with respect to the outcome of litigation involving the validity of the processing taxes that have been levied under the Agricultural Adjustment Act.

Since this Act first became effective in 1933, there has been considerable doubt as to the constitutionality of the processing tax and this doubt was further increased by the decision of the United States Supreme Court in the NRA case.

Following the NRA decision, many processing taxpayers filed suits for recovery of taxes already paid, and others applied for injunctions to restrain the further collection of taxes pending a final decision by the U. S. Supreme Court. In the midst of all the confusion arising out of these individual suits the Federal Court of Appeals, in Boston, on July 16th, reversed the decision of the District Court in the case of the Hoosac Mills Corporation, and declared the processing tax unconstitutional on two particular grounds:

1. That it involves an unconstitutional delegation of Congressional power, and
2. That Congress has no authority to control the production of agricultural commodities in the several states.

This decision gave additional encouragement to those who were doubtful of the legality of the taxes, and a great many taxpayers, who were in a legal position to do so, filed suits for injunctions against the collection of the taxes. In practically every instance the courts have granted injunctions or restraining orders, though such mills are required to make bond for taxes that may become due pending a final court decision, or to pay the taxes to the courts, to be held in escrow until a final decision is rendered.

However, the injunctions that have been granted, apply only to the mills involved, and the Government, having appealed the Hoosac case to the U. S. Supreme Court, has announced its intention of collecting the processing taxes until the question of the legality of the taxes has been finally decided. A final decision in the Hoosac case cannot be expected until November or December, at the earliest.

In the meantime, the situation has been badly complicated by the AAA amendments that are being enacted by Congress. These amendments were introduced for the purpose of strengthening the Act and correcting some of the provisions that endanger its constitutionality. Efforts are being made principally to bar claims and suits for refund of taxes already paid, to ratify and legalize the assessment and collection of the processing taxes under the existing act; and to cure certain defects in the present law by fixing a definite base rate for the processing taxes—in the case of cotton, the tax now in effect, to continue until January 1, 1937.

The amendments as finally passed by the Senate are materially different from the form in which they were enacted by the House, and the final provisions will not be known until both the House and the Senate agree on a conference report on the measures. The uncertainty as to what form these amendments may ultimately take, is a cause of additional confusion in the textile markets.

For a time there was some hope that the AAA amendments might clarify the situation sufficiently to break the impasse that exists in the textile goods markets. But now it seems that the amendments may be the cause of still further delay and uncertainty due to the fact that it may become necessary to carry a test case involving these amendments to the highest courts before the question is entirely settled.

The anxiety of many of the mills' customers as to the status of the tax in the event it is terminated is natural. They do not want to be caught with a large stock of goods on which they have had to pay the processing tax unless they can be guaranteed a refund. On the other hand, the mills cannot afford to sell their goods in the meantime without including the tax in the sales price.

◆◆

At press time, notice is received of a resolution adopted by 150 executives of the carded and combed yarn groups, at a Charlotte meeting on August fifth, providing for refunds to buyers in the event of the termination or any other change of the cotton processing tax, on undelivered contracts; with arrangements for refunds on prior contracts within a given period of time where the mill is relieved of the tax. Similar resolutions were being adopted by other groups during the first week in August. This was done in an effort to stimulate business.

In the meantime the sale of textile goods has been practically halted, and the controversy between the mills and their customers with regard to the handling of the tax in the event of a court decision declaring it illegal, precludes any activity in the industry except on a hand-to-mouth basis.

POWER ON THE PICK (Part I)

By Ivar Moberg

ANYONE interested in weaving will want to study this discussion carefully. It endeavors to clarify a much-misunderstood subject, on which little of a practical nature has been published. The author, Mr. Moberg, is familiar to our readers as the author of the series of articles on "Loom Fixing", now available in booklet form . .

POWER on the pick is a misnomer, but has become such a common expression in the weave room that it is now considered a correct one. Force on the pick would be more appropriate.

Perhaps no other motion of the loom is so little understood and so mechanically imperfect as the picking motion, yet it is the most important of all motions on a loom. A poorly designed and incorrectly adjusted picking motion is the most costly fault we run across in a weave room. Probably 80 to 90 per cent of all replacement parts are the result of the picking motion, either directly or indirectly.

Strictly speaking, mechanically, it is a flop, and is a noisy, inefficient, undependable and oil-slinging device. Not very much can be said in favor of a mechanical movement that has to create a tremendous force and spend it, all in approximately 1/40 of the time of the cycle. If the force could be gradually built up during the 39/40ths of the cycle and then released on the remaining 1/40th of the cycle it would be better. However, until the loom builders give us something better, we will have to get along with it. Of course, the loom builders have not been standing still in this respect, and on the ultra-modern looms there is a great improvement in the picking motion although it is still allowed only 1/40th of the cycle in which to do its work.

Many novel picking motions have been tried out, such as slowly compressing a spring and "firing" it at the time of the pick; using compressed air both directly on the shuttle and indirectly on a picking arrangement; using ascending and descending friction wheels revolving at 2500 r. p. m. and located at the inside end of the shuttle box; electro-magnetic force, etc. None of these picking motions has, however, been developed to a point where it could replace the existing picking motion.

In order to understand the picking motion fully, it is necessary to know the fundamental principle of its design and especially the mathematical formula upon which the picking curve is based.

Referring to Fig. 1 and Fig. 2 herewith, which show the original steps in obtaining the picking curve for a cone picking and a batwing picking motion respectively, it will be seen that the picking curve is not merely a make-shift curve to impel the shuttle with a tremendous impact and send it merrily on its way across the loom. The curve is designed to give a gradual acceleration to the shuttle, but in steps. On the ultra-modern loom the loom builders have eliminated even this step increment of acceleration and the result is a truly constantly accelerating movement of the picker at the pick.

In referring to the drawings, it should be kept in mind that the curve shown is the pitch curve line only and is drawn to show the elementary steps in obtaining a picking curve rather than a curve for a specific condition and scale. In designing a picking motion curve, so much data enter into it that it is rather a complicated job which it is not necessary to discuss in this article. These data include: loom speed, weight and size of shuttle, the retarding forces which the shuttle must overcome in its flight across the loom, the length of the stroke of the picker, the displacement of the pick ball, the distance from the cam shaft center to the pick ball center, the time in which the acceleration of the shuttle must be completed, the width of the loom, etc.

We will eliminate, for our discussion, all data except those required to build up the pitch line curve of a certain picking motion cam. These are:

Distance between cam shaft and pick ball centers at the pitch line, 3¾ inches.

Crank shaft degrees within which the acceleration of the shuttle must be completed, 40.

Ratio of acceleration, 1, 2, 3, and 4 .

Pitch diameter of pick ball, 2½ inches.

Displacement of pick ball, 1½ inches.

Now let us consider Fig. 1 and Fig. 2 in designing a pick cam curve for the foregoing conditions. We realize that this part of the discussion may be just a little "heavy", but we will ask the reader to sit steady and stay with us and we will go through it as simply and clearly and quickly as possible.

To design a pick cam curve, we proceed as follows:

With *A* as a center, draw the base circle *B* equal to the distance between the cam shaft and pick ball centers at the pitch line. Divide this circle into 18 equal parts of 20 degrees each, $360 \div 18 = 20$ degrees. This corresponds to 40 degrees of the crank shaft as given. On one of the 18 divisions of the base circle, set off distance *C-D* equal to the displacement of the pick ball at the pitch line. As the points of acceleration in this case are 1, 2, 3 and 4, divide the distance *C-D* into 10 equal parts, for $1 + 2 + 3 + 4 = 10$. With *A* as a center, draw the part circles *C-D-2*, *C-D-4*, *C-D-7* and *C-D-11* across the 20 degrees portion of the base circle. The points used of the ten divisions are the 2nd, 4th, 7th and 11th.

We now divide the 20 degrees portion of the base circle into 4 equal parts by division lines, *E*, *F*, and *G*. With the divider set to the pitch diameter of the pick ball, we draw in succession circles *H-1*, *G-2*, *F-4*, *E-7*

FIG. 1

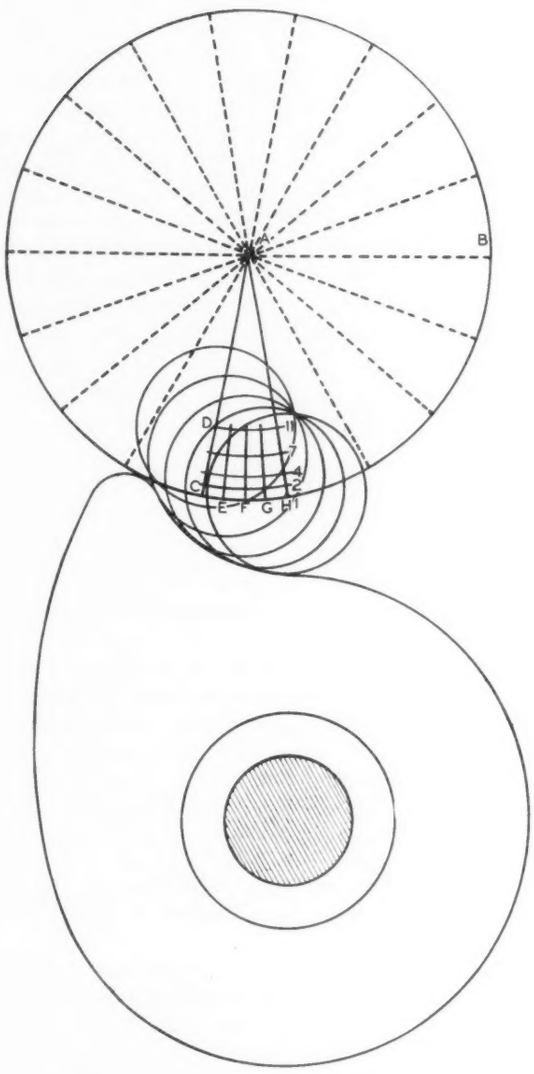
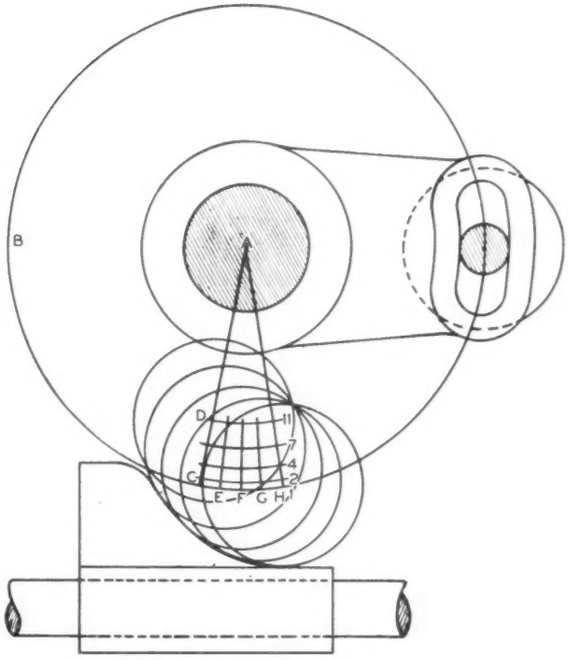


FIG. 2



and *C-11*. This represents the course of the pick ball were it rolled over a stationary pick cam.

We now draw the pitch curve line tangent to these circles from the horizontal plane and up equal to the distance of *C-D*, which is the displacement of the pick ball at the pitch line of a cone picking motion and the displacement of the batwing in a batwing picking motion.

It will be understood that what we really have done is to plot distance against time, which is the force, using a parabolic curve line. If, for instance, as is often the case, we had used 36 instead of 40 degrees of the crank shaft for the acceleration of the shuttle, the force would have been increased and a higher velocity would have been given the picker stick. We must keep in mind that distance against time = velocity.

What is meant by the 1, 2, 3 and 4 ratio of acceleration may be illustrated by dividing the 40 degrees acceleration period into 4 parts of 10 degrees each. Then we divide the movement of the picker into 10 parts. If, for instance, the picker moves 9 inches during the pick, each of the 10 parts would be .9-inch.

Turning the loom over by degrees, we find that the picker moves .9-inch in the first 10-degree period, 1.80 inches in the second 10 degrees, 2.70 inches in the third 10 degrees and 3.60 inches in the fourth 10 degrees period. In other words, the start of the shuttle is slow and the speed increases in four steps up to the finish of the acceleration.

The speed of the shuttle in the four steps can now be calculated from the following proposed data.

Time for acceleration, 40 crankshaft degrees.
Speed of loom, 175 picks per minute.
Distance of picker movement, 9 inches.
Acceleration ratio, 1, 2, 3 and 4.

Then $\frac{40}{360} \times \frac{60}{175} = .03807$ second, required for acceleration.

$\frac{9''}{12''} \times \frac{360}{40} \times \frac{175}{60} = 19.64$ feet per second, average speed of shuttle acceleration.

$\frac{19.64 \times 4}{10} = 7.856$ feet per second, speed of shuttle in the first 10 degrees period of acceleration.

$\frac{19.64 \times 8}{10} = 15.712$ feet per second, speed of shuttle in the second 10 degrees acceleration period.

$\frac{19.64 \times 12}{10} = 23.568$ feet per second in the third 10 degrees acceleration period.

$\frac{19.64 \times 16}{10} = 31.424$ feet per second in the fourth 10 degree acceleration, as the maximum speed of the shuttle when leaving the picker.

The multiples 4, 8, 12 and 16 are obtained by dividing the 40 degrees of crank shaft circle allowed for acceleration into units, each one having a value of one unit higher than the preceding one.

If we had allowed only 36 degrees of the crank shaft for acceleration of the shuttle, its speed would have been correspondingly higher and therefore would give more force on the pick.

Before going further I wish to emphasize that all the figures I have used are purely arbitrary and may or may not be the actual figures for any picking motion. The figures are made to show the importance of the correctly adjusted picking motion later in this article. I also wish to state that there are other methods for obtaining the curve of a picking motion; one in which points of acceleration 1, 2, 4, 7, 11 and 16 are used in constructing the picking curve. This gives a more gradual increment of the acceleration but is, nevertheless, a step increment.

On the latest C. & K. looms, a parabolic curve is used for the picking motion, which curve is designed to give a truly constant acceleration to the shuttle. The acceleration has a duration of 36 crank shaft degrees. This curve, plotted on graph paper from the original mathematical calculations, is the distance traveled against time, or velocity, and would show a line above and below the mathematical curve line, eliminating any step increment of acceleration. After this truly constant acceleration curve is laid out, a pattern is ground accurately to this curve on special machines built for this purpose. The result of this constantly accelerating curve is a pick that is smooth and gentle, provided, however, the picking motion is set and adjusted correctly.

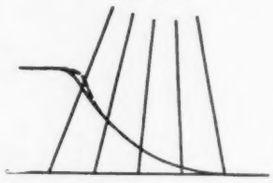
Again referring to Fig. 1 and Fig. 2, it is obvious that we must use the full length of the curve to obtain a smooth and gentle pick. On a cone picking motion it is only necessary to see that the picking cone is in contact with the picking cam at all times and that there is not too much lost motion.

On the batwing pick of the older type it is more difficult to set and maintain the proper setting as there is no fixed point to which the pick shaft can be set. On the latest C. & K. batwing pick, there is a stop screw in the picking arm which comes into contact with the loom frame. By shortening and lengthening the stop screw an exact correct position of the pick shaft can be obtained and maintained.

The position of the pick shaft should always be such that the pick ball will strike the batwing at the beginning of the curve. If the pick shaft is tilted too far away from the pick ball, the batwing will be hit higher up on the curve and a terrific impact will be given the shuttle caused by jumping the first, and perhaps the second, period of slow acceleration. This is also the case in a cone pick when the pick shaft binds in the boxes or in case there is too much lost motion. If, for instance, the pick ball is down on the lowest position of the cam just before the pick, but there is too much lost motion, the shuttle will not start to move before the pick ball is up on the second or third step of acceleration, and the shuttle will be given a hard, quick blow instead of a long, gentle push. This sets up an excessive vibration and gives the shuttle a wobbly flight across the loom. Hence it is paramount that the full length of the picking curve be utilized.

If the curve of the pick cam or batwing is worn as shown in Fig. 3, we lose the final quick acceleration step and a harsh, unsteady pick will be given to the shuttle if we use enough force to drive the shuttle across the loom. If we do not, the loom will bang off. In this case, the speed of the picker stick will be reduced on the fourth acceleration step and the shuttle will leave the picker without deriving any additional force on this acceleration step. Thus, we have been using only the first three steps of the acceleration for the pick when we should have used all four. The result, if the loom does not occasionally bang off, is a very poor pick.

FIG. 3



Some mills have a practice of building up worn pick cam points or batwings by welding. This is false economy, as the proper acceleration curve cannot be maintained very well in welding. Of course the loom will in most instances run with a built-up picking curve, but the pick will be harsh and the flight of the shuttle unsteady. The damage from this condition will amount to many times the cost of a new pick cam point or batwing. This also applies in the case where the loom fixer takes a delight in changing the picking curve.

Theoretically, the curve on a cone pick should be changed for different widths and speeds of looms, but by adjusting the length of the picking arm and the height of the lug strap on the picker stick we can make it serve for different conditions within certain limits. Many fixers and writers advocate moving the pick cam farther in on the picking cone to give more force on the pick when needed. While this actually will give more force on the pick, it should never be resorted to, since the picking cam is designed to run in a certain plane in relation to the picking cone. This determines the angle across the face of the pick cam. If the position of the pick cam is changed on the cam shaft, the picking cone will not make contact across the full width of the pick cam as in Fig. 4, but would contact only on one side, as in Fig. 5. This of course would be a very undesirable condition, and any practical mill man would not knowingly permit it. If we cannot obtain the proper force on the pick by adjusting the length of the picking arm and the height of the lug strap on the picker stick we should turn to the loom builders, who will supply us with the proper pick cam points with a curve for that particular condition. The length adjustment of the lug strap should never be used to regulate the force on the pick, as so many loom fixers do. The length adjustment of the lug strap is only for the purpose of giving the proper length of the stroke to the picker stick.

On the batwing pick we can move the batwing on the pick shaft to give more or less force on the pick. Moving it toward the front of the loom will give more, and toward the back of the loom less, force on the pick. While this is permissible on a batwing pick, it should not be resorted to, nevertheless, unless we are unable to get the proper force on the pick by adjusting the picking arm and lug strap. This, however, should not be overdone, and under no condition should we lower the lug strap below a horizontal position as this will have a tendency to lift the picker stick from the parallel motion stand.

In moving the batwing on the pick shaft, we start out from a position in which the pick ball is one-third to one-half of the way up on the batwing curve when the pick ball arm is in a vertical position during the pick. From this position we can move the batwing on

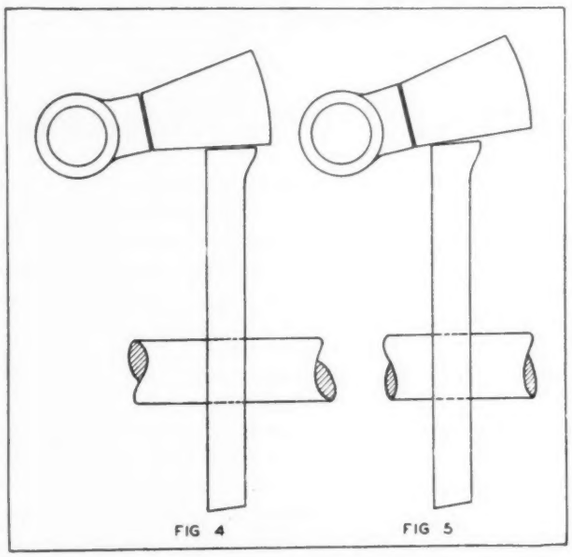


FIG 4 FIG 5

the pick shaft toward the front or the back of the loom as the case may require. After having done this, we must reset the shaft in such a position that the picking ball strikes the batwing at the bottom of the curve. This is imperative for a smooth pick.

I wish to emphasize here the necessity of using the full length of the picking curve for the acceleration of the shuttle. If the shuttle is started from rest or repose first on the second or third acceleration step, the sudden impact will create an excessive vibration and torsion in the whole loom. Since the force on the pick depends on the fourth, or final acceleration step, the loom probably would not bang off but a very great strain would be put on it. There would also be a tendency for the shuttle to cause a skip, slap the opposite shuttle box or fly out of the loom.

Many times loom fixers have told me that it takes less power to drive a heavy shuttle across the loom than it does to drive a lighter one. They have even demonstrated this by raising the lug strap on the picker stick, showing me that the loom would run just the same. Of course, they are all wrong in their assumption that it requires less power to drive a heavy shuttle across than a lighter one. We know that it takes more power to move a heavy object for a certain distance within a certain time than it does to move a lighter object over the same distance within the same length of time. The force on the pick is really nothing more or less than distance against time, or velocity. The power on the pick is distance against time plus resistance. Since it takes more power to overcome inertia in a heavy object than in a lighter one it will require more power of the loom to drive a heavy shuttle across. However, since a heavy shuttle has more resistance to the retarding forces, we can reduce the velocity somewhat but this does not mean that we reduce the power on the pick, neither do we reduce the strain on the picking motion nor the strain on the loom. When the loom fixers raised the lug strap on the picker stick to show me that a heavy shuttle required less power, they really reduced the distance traveled by the picker in a certain time; in other words, they reduced the velocity in feet per second. They failed, however, to take into consideration that the amount of foot-pounds that the picking motion had to develop during the pick was much more than if the shuttle had been lighter.

(In the concluding installment of this article, which will appear next month, Mr. Moberg will discuss in a very practical manner the setting and adjustment of the picking motion.—The Editor.)

"Married Women Weavers"

Readers in the United States will be interested in reading the following discussion, under the above title, which appeared in the July 15 issue of the *Textile Recorder*, a prominent English textile publication of Manchester, England. It was signed "By a Shed Manager", and presents an interesting sidelight on the English point of view:

MARRIED women weavers are not viewed with great favour by overlookers or weaving shed managers and although the directors or owners of large mills may not be aware of this fact, it is true that almost every one who has to supervise weavers prefers single girls to married women. Married women whose husbands are at work, usually adopt a care-free attitude to the job on hand, as they have a feeling of semi-independence. Indeed in many cases where the husband is unemployed and on the "means test," it pays the woman to get her discharge, because her pay is taken into account when the husband applies for unemployment benefit.

It has been argued that married women keep the standard of weaving wages at a low level and if this is true, it is unfair to single women and men weavers. Most married-women weavers go to work to help the family exchequer and they can afford to accept a lower wage than if they were solely dependent on their own earnings. Some married women go to work because they are lonely at home and the wages constitute nothing more than "pin-money."

One of the weaving manager's chief worries is absenteeism. It plays havoc with production and married women are the chief offenders in this respect. The reasons for absence may be important to a wife and mother, but to the manager who has to keep production as high as possible, the reasons are poor consolation for low output. When the husband is ill, the married woman is absent; when her children are ill, her presence at home is demanded; when the children are late for school, she may take a half-day off to ensure that they do not hurt themselves at home.

Another source of worry to weaving managers, is the possibility of trouble if the husband and wife are employed in the same mill, especially if they are both weavers. The natural thing for them to do is to help each other, and they do it—to the resentment of the other weavers. This resentment is a very real factor if piece-work rates are in operation and doubly so if a shift system is worked and the husband and wife are on different sets on the same shift.

If the wife has a warp smash on her set, the husband will help her to put it straight, although it may mean that his own set of looms is left in bad "fettle" for the other shift. If the other shift-mates complain, they are generally talked down by the husband and wife together. All this leads to discontent and strife, which would be avoided if women weavers would stay at home after marriage.

A cotton picking scene in Arkansas. Will the shifts in the world cotton market continue to diminish the demand for American cotton? Photographs copyright Coovert, Memphis, Tennessee.

New Trends in the World Cotton Markets

By Max Lekus, Ph. D.

SINCE 1922, U. S. cotton production has constituted, broadly speaking, about 60 per cent of the entire cotton output throughout the world. In 1934, American cotton production fell to 43 per cent of the world harvest, due to the restriction measures enacted by the New Deal.

Cotton exports from the U. S. for the period of

August 1, 1934-April 30, 1935, were 3,908,000 bales
August 1, 1933-April 30, 1934, were 6,522,000 bales
August 1, 1932-April 30, 1933, were 6,633,000 bales.

Thus, export of American cotton fell by 40 per cent during the 1934-35 season below the amount of the preceding period.

When the New Deal launched upon its cotton restriction program, it must have foreseen that such changes of paramount importance would necessarily create far-reaching effects upon the world market.

These changes have been clearly reflected by the World Cotton Congress which convened at Rome, Italy, towards the end of April of this year and concluded its session on May 4th.

The American press was widely featured those resolutions adopted by the Congress which dealt with American cotton exports. False baling methods by American exporters, increasingly inferior grades of our export cotton and the high cotton price, "kept artificially by Governmental subsidies", were condemned by these resolutions.

While these matters have been more or less widely publicized, this article endeavors to deal with those direct changes in world cotton production which have been caused by curtailment of our cotton exports.

World consumers of cotton have necessarily been forced to look towards other countries for the purchase of their raw materials. For American cotton in the world market has not only diminished, but its price has made competition increasingly difficult. Taking the present price level of 11.5-12 cents per pound for cotton, other countries are bound to make terrific inroads upon U. S. sales abroad. While the small American cotton producer would see his profits wiped out at a price of 10 cents, Brazilian cotton growers for instance, can afford to sell at 7 and 8 cents and still realize a small profit margin.

Taking advantage of this situation, other cotton-growing countries, especially Brazil, Russia and China, have stepped up cotton exports greatly during the last year, while Egyptian cotton has made a surprising comeback to the level attained during pre-depression years.

Table I, comparing the cotton exports of the world's main cotton growers offers an interesting comparison.

TABLE I

Country	Average 1924-29	31-32	32-33	33-34
	(In thousand bales)			
U. S. A.				
Egypt	1,538	1,307	1,038	1,550
India	4,504	3,334	4,109	4,600
China	1,533	1,106	1,871	2,200
Brazil	483	464	373	1,100
Russia	839	1,851	1,778	1,700
Peru	224	223	260	275
Mexico	216	186	95	200
All others	985	1,187	1,100	1,300
Total exports, except USA	10,322	9,658	10,624	12,925
World production	25,494	26,535	23,585	22,591

These changes, occurring with cotton growers throughout the world, have created a deepening effect upon cotton consumers.

Due to the prevailing uncertainty as to American cotton outputs and to the governmentally subsidized price-structure, cotton buyers throughout the world have begun to express preference for cotton from other sources. Egypt and Brazil have been the countries which have profited most at the expense of America's dwindling exports during recent years.

Of particular interest is the attitude taken by Japan towards American cotton.

During a 12-month period ending January 1935,

Japanese spindles consumed a total of 3,545,000 bales of cotton. Of these, 1,748,000 were purchased from the U. S., while British-India came second by selling 1,424,000 bales. However, there are certain indications that in the future, Japan will strive to keep down purchases both from the U. S. as well as from British India. Most interesting in this connection are the efforts made by Japan to build up cotton supplies in Brazil as well as in Siam.

Cotton growing in Brazil has during the last two years been increasingly in the hands of small Japanese cotton farmers. It has been estimated that in the State of Sao Palo, 48 per cent of the entire cotton output has been grown by Japanese. Several trade missions have gone from Japan to Brazil within the last year or two, with the main purpose of studying the possibilities of further developments of cotton growing and, at the same time, in order to pave the way for further Japanese immigration. More and more land is being utilized throughout Brazil for cotton planting and while its output is still small as measured with the cotton demand of Japan, yet there arises distinctly a menace to American cotton exports.

Siam is another instance of Japanese efforts to built up independent cotton supplies. A few weeks ago, the World press reported a growing rapprochement between Siam and Japan. Until '33, Siam exported 80 per cent of its total rice exports to Japan; since then, however, that country enacted a virtual embargo against all rice imports from other countries by the Rice Control act of 1933. Consequently, Japanese imports into Siam of cheap manufactured goods mounted terrifically, while Siam was unable to export rice to Japan. When disfavor against Nippon mounted, the Japanese took the initiative and sent a trade mission to Bangkok in order to study possibilities of enhancing Siamese exports to Japan.

It was then generally thought that this development may culminate in a scaling-down by Japan of the barriers erected against Siamese rice-imports. Yet, no such action followed. However, it seeped out that the Japanese had instead come to Siam in order to study possibilities of cotton planting in Siam on a large scale.

Geographical conditions in Siam do not differ vastly from those prevailing in other tropical cotton-growing countries. Should Siam engage in cotton growing upon a larger scale, therefore, a further reduction of our sales to Japan would necessarily result.

On the part of Japan, these efforts to build up cotton sources independent of the U. S. and the British, are of course the result not only of business expediency, but also of deliberations of a political nature.

The present Sino-Japanese tension has brought out clearly Japan's intention of governing China's future fate. Such a result would open up China's market to Japanese products which heretofore did very badly due to the boycott of the Chinese masses against Japanese goods. It would, furthermore, establish Japanese supremacy in the Far East by giving China definitely into the hands of Japan and by annihilating the influence in China of the great White Powers.

How far Britain and the United States, both immediately concerned with the Chinese situation, will take a hand in this game either now or in the future, is a matter of speculation. Should there, however, be complications of any kind, such as economic retaliation or even war, then Japan would have to rely upon its own sources for raw materials. In the case of cotton, Siam and Brazil would be called upon as sources for Japan's cotton spindles, the former being bound to Nippon by racial ties, while in Brazil a growing Japanese infiltration as well as commercial ties would strive to bring that country into the Japanese fold.

Thus, the changes bound up with the shifting of world cotton output away from the U. S. A. are of fundamental importance. This article does not intend to deal with the merits or shortcomings of the New Deal's cotton policy as far as its results within our domestic sphere are concerned. As to American cotton exports, however, it seems as if a relinquishment of our place in the world market will encourage certain trends which may sooner or later bear adverse results not only upon our own cotton industry, but also may upset the world cotton structure.

Another Arkansas scene: Weighing the picked cotton in the field.

Marshall Field's Merchandise Express

AN ELEVEN-CAR air-conditioned "train-store" was utilized last month by Marshall Field & Company, Wholesale, in a novel tour of a part of the Southeast. The objective was to acquaint merchants in the territory with the products manufactured, converted and imported by Marshall Field & Company. The "Merchandise Express" made an inaugural tour of more than 3,000 miles, from Chicago to New Orleans, and back to Chicago by way of Birmingham, Atlanta, Knoxville and Cincinnati. Officials accompanying the train indicated complete satisfaction with the results of the trip.

The Merchandise Express, a unique idea in merchandising, consisted of six Baltimore and Ohio coaches, a lounge car, diner and sleeping car—all completely air conditioned while the train was

A buyer who came 200 miles to visit the air-conditioned Merchandise Express of Marshall Field, examining some cotton dresses . . . . . .

stopped as well as moving. A special power car containing three dynamos operated the air conditioning equipment, maintaining a temperature of 68 degrees. This is the first time in the history of railroading that a train could be air-conditioned while not in motion for longer than two hours.

Six of the coaches had been transformed into modern display rooms, with up-to-date fixtures and indirect lighting for spotlighting the displays, and contained displays of manufactured lines from every department of this nationally known establishment.

Of interest from a textile standpoint were the cars given over to the products of the company's mills—the Carolina Cotton & Woolen Mills, at Spray, Leaksville, Draper, and High Point, N. C., and Fieldale, Va. Sheets, blankets, rugs, silk fabrics, underwear and hosiery, and other products of this extensive chain of southern mills were prominent in the displays extending throughout the six cars of the train used for the purpose.

An exhibit of rugs in one of the train's cars . . .

The Merchandise Express carried a sales force of 25 men and women under D. J. O'Grady, sales promotion manager, with advertising writers and lay-out men, prepared copy, matrices, and window display suggestions available to local merchants.

The mills of Carolina Cotton & Woolen Mills comprise one of the more important groups in southern textile manufacturing. An opportunity to visit and inspect the Merchandise Express while it was in Atlanta for a two-day stay was afforded through the courtesy of Luther H. Hodges, vice-president and general manager of these mills. It was an inspiring revelation to see the attractive displays of this progressive firm thus brought almost to the very doorsteps of southern merchants, and refreshing to learn that this unique and progressive enterprise in merchandising had been so received throughout the South that it was a profitable venture.—R. W. P.

A display of Sargent dresses on the train . . .

Personnel and Employment Methods as Applied at Martha Mills (Part 2)

A competent discussion of personnel and employment departments for textile mills, and a detailed description of procedure as practically applied . . . .

By Sara M. Britt

Employment Manager, Martha Mills

(Editor's Note.—This is the second installment of the article by Mrs. Britt, the first part of which appeared in the July issue, on page 33, and which discusses the operation of employment or personnel departments in textile mills, and describes the methods used at the Martha Mills of the B. F. Goodrich Company at Thomaston, Ga. The first installment discussed the subject generally, and brought us up to the point, in the procedure, where the department head enters a requisition for new help.)

WHEN a department needs new hands, a requisition card is filled in by the overseer for each hand to be hired, designating the type of work, the department, and on which shift he is needed. There is nothing formal about these requisitions; however, they are quite necessary in order that the employment department will hire the correct number of hands for the shift on which they are needed. When the new operative reports for work these cards are signed and dated by the overseer and returned to the payroll department, they then go to the employment department to designate that the operator has been definitely installed.

Even though these requisition cards come to me completely filled out, I like to talk over with the overseer the exact type of person he would like, and he feels perfectly free to ask me to hire a certain person for him who, he knows, has in his application. The application cards bearing the earliest dates and best recommendations are pulled, and again the overseers and I read over these cards and decide together which of the eligible prospects I shall send for. The prospects whom we select are then notified by wire or letter to report at their earliest convenience for physical examination, as all jobs are subject to this examination. It is not wise to make physical examinations on all prospects at the time of application, because of probable elimination due to poor recommendations and the worthlessness of a "physical" unless it is current.

Physicals have been considered superfluous in the process of hiring by many large companies, and the attitude of some applicants was expressed very definitely to me by a man who had been waiting some 30 minutes to be examined. He stormed into my office and, in a very disgusted tone, said, "I'm tired of waiting for that examination, and I've just been thinking that if you have to go to so much damn trouble to get a job here—well, I'll just be hittin' the dirt again. You can throw that application of mine in the trash can." I decided quickly to make a test case of him, for he was the first experience of this type I had had. I answered, "That's perfectly all right. You asked for the job and you knew we had physical examinations; however, if you decide later you want a job here, don't hesitate to drop in to see me."

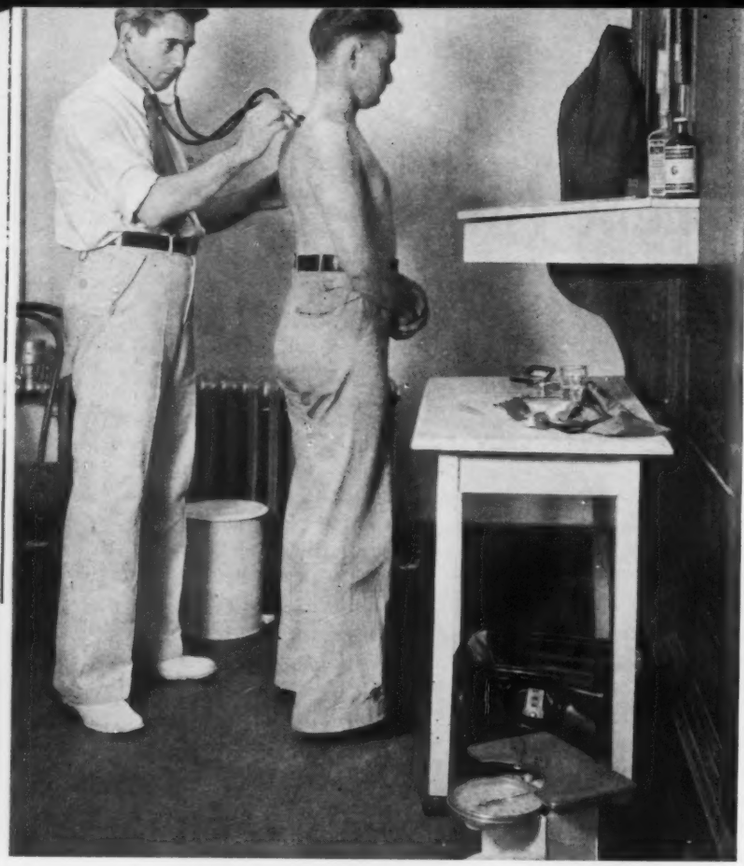
No application card is ever thrown away, but I took no chance of forgetting this prospect and wrote up his attitude carefully and attached it to his card and sent it to the files, hoping that I would need it later. My guess was right, for about three months later, whom should I see standing in the waiting room but this same fellow. I called him in as soon as possible, for I could hardly wait to hear what he had to say, and his story was something like this:

"Did you mean what you said about coming back? Well, if you will just write me up another card I will be the happiest man in the world, and believe me, if I get the job you won't have to worry about me staying with you. I have wished a hundred times that I hadn't been such a fool, and I would have been back sooner but I was just ashamed to come. I had a job and it paid good, too, but the fellow that ran the set of frames next to mine coughed all the time, and if he ain't got tuberculosis there ain't a cow in Texas." His application was reinstated and finally he was called in for an examination. He went through without a bobble, was hired, and is still proving that he meant what he said about sticking.

The Physical Examination

Our physical examinations include tests of eyes, mouth, tonsils, lungs, heart, blood pressure, temperature and abnormalities or defects of any kind. They are the usual insurance examinations. These records give valuable information to the company in that we are able to know definitely those who have contagious and infectious diseases, also those who are not in physical condition to hold their jobs, such as those with extremely high or low blood pressure, toxic thyroids, hernias, etc. But the greatest advantage is that we are able to give the people concrete evidence of their physical imperfections, thus educating them to take better care of their bodies, teeth and eyes.

I could relate hundreds of stories of appreciation of these examinations. In most cases the person is totally ignorant of his defects and appreciates finding out about himself and is eager to get in good shape. Those of only minor defects are hired, and



Dr. T. B. Taylor is shown examining an applicant, as a part of the physical examination at Martha Mills

in most of these cases a complete follow-up is made to be sure that the treatment the person is taking is making the necessary repairs. These subsequent examinations come at intervals of 30 to 60 days depending upon the type of defect.

We are glad to pass our findings on to the operative and in this way we get his full co-operation and appreciation.

If a person is rejected on a preliminary or subsequent examination he is told why he is being rejected and how he can make himself fit for work. I have seen people with as poor as 20/50 vision in one eye and a 20/80 in the other, who were totally unaware of their defective vision. With proper glasses it is possible that these same eyes can be improved to a 20/25 or 20/30 vision, in which case the person would then be eligible for hiring. Also, in cases of high or low blood-pressure, some cases can be completely corrected by removing the source of infection causing this irregularity.

Talking with the New Employee after the Physical Examination is Passed

The examination completed, we are now ready to sign up the applicant for employment. All data concerning the person are accumulated, consisting of application card, letter of recommendation, all correspondence directly with the prospect, the requisition card and the report of his physical examination. These data are reviewed quickly and we are ready for the new employee as soon as he comes from the examination dressing room. His physical examination is discussed with him, the insurance plan is presented and accepted or rejected; the old-age pension plan is presented and accepted or rejected; Christmas savings plan is presented; educational plans for children and grown-ups are discussed; how individual effort is rewarded for better jobs; the home beautiful contest explained, etc.

He is assured that if he makes an honest effort to run his job and be a good citizen in and out of the plant, the job is his from that minute on. He is invited to drop back within a week or so and let me know how he is getting along. He is then sent to the assistant's desk where all the forms are filled in and signed by the employee, and he is given a clock-card and a "put-to-work" slip addressed to the overseer to show that he has been properly signed up.

When the new operator reports on the job, he is given full instructions as to the safety rules in that department, and taken to the machine and shown the safety devices and cautioned against possible but careless accidents. The section man watches the new operative carefully for the first few days and helps him in every way possible to get accustomed to and like his new job. With the proper safety devices and instructions and guards on exposed moving parts, there is no excuse for accidents.

Handling Unskilled Help and Learners

Unskilled applicants are handled in the same general manner as skilled labor with the exception of trying out on the job, which, of course, would be superfluous. No applications are taken on inexperienced help living out of the county. Applications taken on those who live outside of the village are kept separate from inexperienced village applicants and the village applicants are always given preference and in the order of the date on which they were placed.

The employment office is notified that a certain department is ready for say six learners on a certain job. The first six village applicants are sent for and given a thorough explanation of the job open. If these prospects are not physically adapted to the job in question—that is, for example, too tall for doffing or too short for frames—they are immediately eliminated and told that they will be called in when a job of a more suitable nature is open. The eligible prospects are then given passes to the department to see the jobs they are to learn. If the job is acceptable and interesting, then we proceed to hire; if not, they are asked to wait for the next opening. An effort should always be made to locate a person on a job he wants to do, and a better operative is always the result. Even the inexperienced prospects are not hesitant about expressing their dislikes concerning a certain job if they know it will not be held against them as to their chances later for a position they will like.

It is definitely profitable to follow up absentees of long and short duration. It enables the employment department to avoid classifying an absentee as a "quit" and costing the plant a turnover. At the time a person is hired, a daily attendance record is sent to the department in which he is to work, and remains there until the operative is out for four consecutive days ("no report") or is absent six consec-

utive days ("out sick", "let-off", or "sent out") or any combination of these four reasons, at which time the card is returned to the payroll department, and to the employment department. These cards are held several days and if the operative does not report we make a thorough investigation to determine just how long he expects to be out. In the case of long time absentees such as leaves of absence on account of health, surgicals, and obstetric cases, the insurance and pension may be carried by the operative's family and he does not lose his back service. In the case of a short time absentee, the card is held for his return, and neither of these cases would appear on the turnover report.

Some years ago a situation confronted us which seemed to have no solution. A family would come in and ask for their time, giving as their only excuse for leaving that they had not seen their folks in a year and were going to visit around for a while.

How idiotic it seemed for a whole family to quit their jobs with nothing in sight to provide them with food and clothing except the generosity of their relatives. But we also noticed that within a few weeks this same family would be back at the plant asking for their jobs. Consequently, there was a constant shifting of help from one town to another, and when we hired a new hand we could be certain that he would probably stay no longer than one year, and then he would go visiting again.

We developed from this situation the "let-off" slip which, at the mutual convenience of the overseer and operative, allowed him to be off for a week or so to visit or go fishing to his heart's content, and still have his job when he returned. This slip is made in triplicate, a copy kept by the overseer, a copy sent to the employment department with his record card, and the operative is given a copy. This slip clearly states the date on which he is expected to return to work, so that there may be no misunderstanding between the operative and the overseer. The operative retains his seniority, and the employment record, both of which are very important and profitable to a person working at this plant, and he is in no way penalized for his absence.

This one simple routine has done wonders in stabilizing our help and has helped us to cut the turnover an appreciable amount. Not until we are certain a person definitely desires to sever his connection with the company, or has been discharged, do we list his name on the turnover report.

In case of a separation for any cause—that is, a voluntary "quit", or a discharge by supervision, the operator is given an order for his time. Before he receives the money for his back time, he must contact the employment office, the house department, and the superintendent. When the operator reports to the employment department we try to get his reaction toward all of the details surrounding his separation with the company.

Once each week we write up a very full report of all these contacts together with all other information concerning that person and a copy of this report is sent to the general manager and to the superintendent. Also a copy of each individual's report is pasted in his permanent record for future reference as previously explained.

This particular type of record is proving very valuable in that we are able to refresh our memories at any time of innumerable details which we could not get from any other source.

How the Turn-Over Report is Figured

Our turn-over is figured on the basis of the percentage of separations as to the number of employees in that particular department, for the week, also for a year to date. Copies of this report are sent to the management, superintendent, and overseers each week. By putting the turn-over on a competitive basis with the overseers, better management is evidenced, and each one, by keeping his personnel intact, gets higher production efficiency and less imperfections. There has not been a lay-off on account of surplus help at our plant over a period of several years, and the turn-over has been three per cent per month for the first three months of this year.

Another great aid in stabilizing help is to establish a definite chance of promotion. At the present time we have approximately 130 people at the plant preparing themselves for better jobs. Once each month the employment department is advised of the progress of each of these individuals and a series of colored tabs are used for these operatives' perma-

Another step in the physical examination. The nurse assisting Dr. Taylor is Miss Daisy Sinclair . . .

nent record folders to designate the job for which they are preparing themselves. This method enables us to put operatives on the better jobs who are already familiar with our work and methods, but best of all, for those who are ambitious, there is a definite chance to get ahead. With the definite idea of promotion a man subconsciously begins to develop. He becomes ambitious, not only to improve his ability to handle a better job, but he begins to really think. He begins to study his own job more closely. Finally, he has thought out a way of improving the products of his machine, or how to eliminate a certain percentage of waste, or install an excellent safety device, or how to improve the efficiency of his job or of the conditions surrounding it. These suggestions are handled, at our plant, by a committee who studies each one carefully and selects the ones worthy of recognition. A cash award is given for each suggestion that is accepted, and last month seven suggestions were accepted, the rewards ranging from $3.00 to $50.00.

Education as to Leisure Time

Much time and thought is being spent to help our people develop constructive means of spending their leisure time. By promoting "Home-Beautiful" contests each year in the village, the people become interested in transforming their yards into veritable gardens. Each may use his own ideas of beauty in developing these yards, and inspections are made each week through the spring and summer months and prizes are awarded for the best, the second best, and the third best yard in each of the five sections of the village. The best rock garden gets a prize, and of course, the best yard in all the village is awarded a grand prize. There is also each year a flower show for cut flowers and pot plants at which prizes are given for the best display. Top-soil, rocks, motes, grass, sand and gravel are hauled to anyone in the village just for the asking, and this is a great aid to the people in beautifying the yards and producing better flowers.

Small plots of ground are granted to those who are interested in making vegetable gardens, and never in all my life have I seen such onions, tomatoes and beans as can be grown in these 2 x 4 gardens.

Pastures and stall space are free for those who wish to keep cows. Then comes the pennant-winning baseball team which always has an immense following; the band with its semi-monthly concerts; the tennis courts; the mothers' club and the girl and boy scouts with men from the plant as leaders.

It has always been the policy of the management to make available the kinds of recreation and hobbies which will appeal to each individual, whether it be games, music, gardening, cows, chickens, pet rabbits, dogs, or just tinkering in a work-shop, which is another way of saying, "recognize your people as individual personalities and try to keep them as such."

One cannot overlook the importance of hiring the right kind of new help, and as a result we effect a dollars and cents savings for our company, but there is another job which ranks second to none in all personnel departments and that is the creation and promotion of the continuance of good will and understanding. First impressions of the company are made in this department; they are either good or bad. These impressions make boosters or knockers.

The skeleton in a mill closet may easily be the old rut into which it has allowed itself to remain. It is easy to say, "Our personnel department (or method of hiring) is functioning very nicely. We gave it considerable time and thought some two or three years ago and have had no trouble since." But times change rapidly and we soon find ourselves and our systems pitifully obsolete if we are not alert to follow through suggestions which will keep us abreast of the times.

In the July Textile Research

The July number of *Textile Research* comments editorially upon the very encouraging progress that is being made by the leading textile research organizations in interpreting current scientific research results in language that can be understood by the average technician, thus hastening the practical application of new scientific findings.

Examples noted are interpretative reviews of researches on wool carbonization and the chemistry of wool, conducted under the auspices of the American Association of Textile Chemists and Colorists. It is also stated that the warp sizing research, now being conducted at Massachusetts Institute of Technology by U. S. Institute for Textile Research, Inc., has had interpretation of its results prepared for in advance by the selection of committees having this responsibility.

The leading article in this issue is the "Interpretation of Data Obtained with Spectrophotometers of the Polarizing Type," by Robert D. Nutting. Mr. Nutting is a senior fellow of the Textile Foundation who has been studying under Prof. A. C. Hardy at M. I. T., and on the use of Prof. Hardy's spectrophotometer in the dye and textile industries. In this interpretative article he explains a simple method for translating data obtained with plane-polarized light to a basis of ordinary illumination.

Another Textile Foundation research report in this issue by Mearl A. Kise provides a very complete summary and bibliography of the work to date on the solution and regeneration of natural silk fibers, under the title "Silk Fibroin Dispergation".

There is brief reference in the same number to the first conference, June 29, of committees and firms co-operating in U. S. Institute's warp sizing research, at which the research director, Dr. J. R. Katz, delivered a lecture on the basic properties of starches. Some 35 of the 55 firms qualifying to receive confidential progress reports of this research were represented at the meeting. Dr. Katz is planning to lecture on gelatins and other sizing materials in the early Fall.

The following firms have recently taken out contributing memberships in U. S. Institute for the purpose of qualifying to receive confidential progress reports of the warp sizing research: Pigelow-Sanford Carpet Co., Thompsonville, Conn.; Bloomsburg (Pa.) Silk Mill; Drake Corp., Norfolk, Va.; Fairforest Finishing Co., Spartanburg, S. C.; Farr Alpaca Co., Holyoke, Mass.; Hart Products Corp., New York, N. Y.; National Adhesives Corp., New York, N. Y.; North American Rayon Corp., Elizabethton, Tenn.; Penick & Ford, Ltd., New York, N. Y.; The Texas Co., New York, N. Y.; Tubize Chatillon Corp., New York, N. Y.

MERCERIZATION—Its Place in Relation to Other Processes

By J. Andrew Clark

Chief Chemist, Dutchess Bleachery, Inc.

A POPULAR contributor discusses an interesting subject. A brief history and description of mercerizing, the factors of swelling, luster and untwisting, and discussion of the proper location of mercerizing in the range of processes—in relation to bleaching, dyeing, etc.—are given . . .

BEFORE considering the subject of mercerization and its relation to the other finishing operations, it may be profitable first to review the subject in a general and semi-theoretical sense. Mercerization, in brief, consists of first treating the fabric with a cold caustic alkali solution of controlled concentration for a definite though short period of time. Following this, the material is treated with water, and if under tension at this time, a pronounced permanent luster is obtained in addition to a semi-translucent appearance. If, in treating the fabric with water, no tension is applied, considerable shrinkage occurs while very little or no luster is obtained. In both cases, however, a gain in tensile strength and affinity for dyestuffs is generally noted. In fact, it was for these latter effects that mercerization was first employed commercially.

John Mercer is credited with the accidental discovery of this process when clarifying a concentrated solution of caustic soda by filtering through a cotton cloth, although the conditions of the experiment were such as to make it doubtful that any great luster was obtained. He was granted an English patent in 1850 and, for some years, engaged in mercerizing yarn to increase its tensile strength and affinity for dyes. The process was developed along these lines only, until about 1890, when Thomas and other independent investigators noted the production of luster by the application of tension, and the former was granted a patent covering this in 1891. He was successful in obtaining basic patents in Germany, France, England and the United States after which he succeeded in establishing this process on a license basis. Although fear of litigation presumably arrested competitive development by American interests until around 1900, when the patent was finally nullified by the United States Court in 1906, the process had been developed to a firmly established position in the textile field.

Study of the cotton fiber with the microscope before and after mercerizing shows that the well known characteristic twisted ribbon-like appearance of the untreated fiber changes by swelling in diameter to become roughly circular in cross-section, while the lumen or internal canal, in addition, is changed in form and all but disappears with the thickening of the cell wall. At the same time, the fiber becomes translucent. This swelling removes the twist in great measure to give the fiber a rod-like form which closely approximates the appearance of silk or rayon filaments. This latter effect is, however, only produced when the fibers are under tension during the treatment; otherwise, the surface becomes wrinkled. In addition, the fiber shrinks considerably in length.

This transition from ribbon to rod-like structure is responsible in the main for the production of luster in the finished fabric, since the altered fiber reflects larger quantities of light to the eye as parallel rays from the more regular surface. Unmercerized cotton, in contrast, scatters its surface reflection in all directions to give its characteristic opaque, dull appearance. The degree of luster obtained by this change, therefore, depends on the relative amount of light reflected as parallel rays. This phenomenom may be demonstrated by grinding to powder in a mortar, a piece of glass rod or plate, and afterwards observing its color and luster. If the glass is ground fine enough, it will be found that the color has become lighter to approximate white, while the luster has entirely disappeared. While this reason has been advanced by several authorities, others have held to the theory that removal of the cuticle of the fiber by the strong caustic produced luster with exposure of a resultant hydro-cellulose. This theory, however, has been well refuted by later investigators who found that not only could lustrous mercerized cotton be re-mercerized without tension to yield a non-lustrous fabric, but also that the cuticle is in fact not removed, but can withstand the action of boiling and mercerization without removal.

The action of caustic soda on cellulose has been studied by many workers to explain the mechanism of the reaction. Mercer, of course, first noticed the reaction and studied it. Others, following his lead, studied the reaction from different angles, generally arriving at the conclusion that, first, the cellulose absorbed both caustic alkali and water, from the mercerizing solution to form an unstable alkali cellulose compound $(C_6H_{10}O_5)_2$ NaOH, with evolution of heat, while the cellulose is at the same time distended or swollen by the water associated with the hydroxyl ion. This maximum swelling is shown by several investigators to occur in concentrations of 14.3 to 15.5 per cent sodium hydroxide solution. The relation of swelling to concentration of caustic can be

seen from inspection of the curves drawn from the data of Coward and Spencer *(Journal of the Textile Inst. 1923)* (See Fig. 1) which show both that maximum water is absorbed from caustic of 14.3 per cent and that the volume of liquid absorbed by the cotton reaches a practical constant for all concentrations of caustic beyond this value.

Investigation of swelling in its relation to production of luster has shown that untwisting of the fiber has an important bearing on this. It has been observed in this connection, that until the caustic exceeds 11 per cent (25 degrees Tw.) only untwisting of the fiber occurs; that at 15 per cent (34 degrees Tw.) swelling follows the untwisting; at 17.7 per cent (40 degrees Tw.) swelling and untwisting occur simultaneously, while from 27 to 36.3 per cent (60 degrees Tw.-79.5 degrees Tw.), the untwisting follows the swelling. With our knowledge that, in practice, the luster is produced within the range of 40 degrees-65 degrees Tw., it is thus evident that both swelling and untwisting occur simultaneously during mercerization. In addition, swelling in cross-section is also accompanied by shrinkage in length, both of which phenomena have been explained by other investigators as an example of osmosis following the formation of a sodium salt, in the formation of which the cellulose acts as a weak mono-basic acid. The law of mass action is thought to apply to this reaction, in that the quantity of alkali-cellulose salt formed increases with the concentration of caustic. In addition, water is then thought to migrate through the semi-permeable cuticle until the increase in volume is limited by the dimensions of the cuticle itself.

Results obtained in the study of the shrinkage-caustic relationship vary somewhat as reported by different investigators. While the actual values dif-

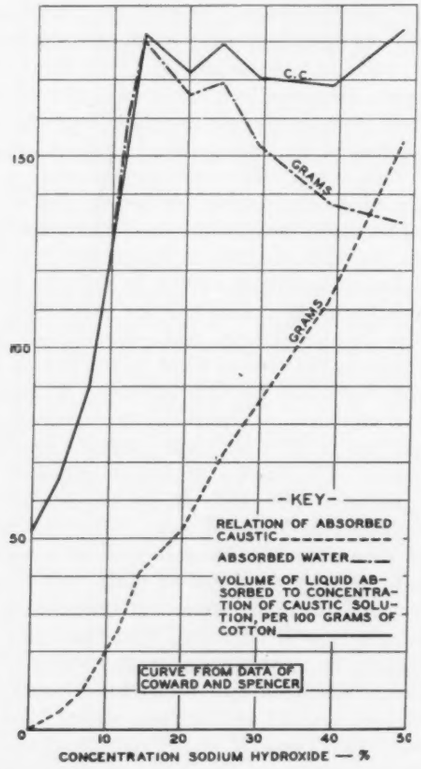


Fig. 1—Illustrating the relation of the volume of absorbed liquid to the caustic concentration . .

This chart shows that a rapidly increasing rate of absorption occurs with increasing concentration of caustic to a maximum at about 14 per cent, and then remains practically constant. The rapidly increasing amount of caustic is compensated by a rapid fall in the amount of absorbed water to maintain this relation. This chart only applies to cellulose restrained by a cuticle, and the authors* consider that the cuticle limits the swelling to a constant value corresponding to about 14.3 per cent caustic. Cellulose unrestrained is known to swell considerably more than the above value. The volume of the liquid absorbed is the measure of the swelling.

(*) Data for this chart taken from articles by H. F. Coward and Leo Spencer, in *Journal of Textile Institution*, 1923, Volume 14, pages T28 and T32 . . .

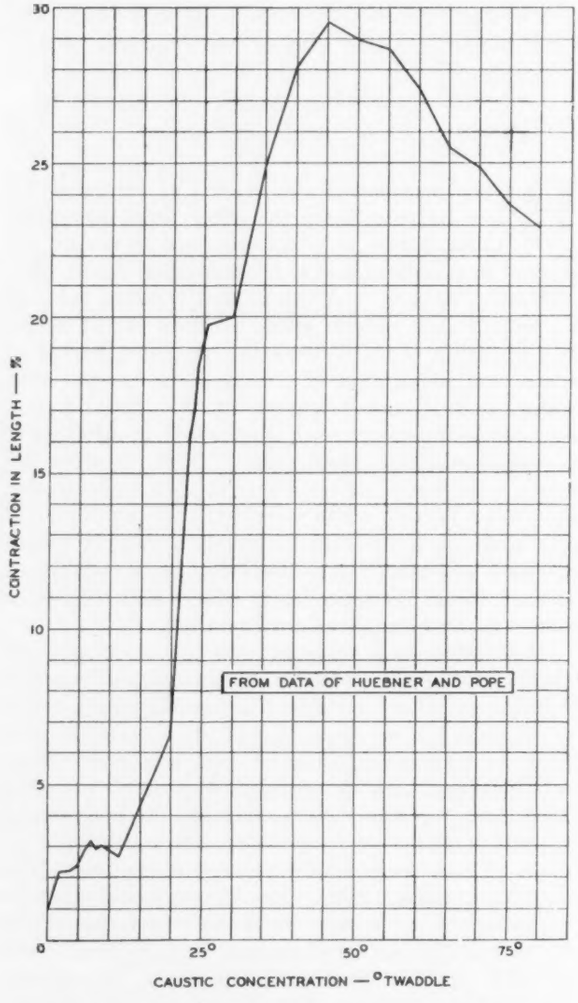


Fig. 2—Indicating the relation of shrinkage to caustic concentration, based on hanks of cotton yarn, 200-yard lengths . . . . . .

The contraction is small and increases slowly, but at 20-22 degrees Tw. it is very rapid, increasing to a maximum at about 45 degrees Tw. Increasing the concentration beyond this value causes less contraction. (Data for this chart taken from "The Luster, the Tinctorial Properties, and the Structural Alterations which Result from Treating Cotton with Mercerizing Liquids", by Julius Hubner and Wm. J. Pope, *Journal Soc. Chem. Ind.*, 1904, 23, page 404.) . .

fer slightly owing to differences in procedure and materials used, they are in general agreement that below 22 degrees Tw., shrinkage is slight, but that above this, shrinkage increases rapidly to a maximum at 45 degrees Tw. With concentrations of caustic above this value, shrinkage diminishes until at 85 degrees Tw., only a negligible value is obtained. Maximum shrinkage of 31.3 per cent was claimed by one authority to occur with 64 degrees Tw. caustic at 50 degrees F. Measurement of the extent of shrinkage or of the amount of absorbed alkali may thus be utilized to indicate the quality or degree of mercerizing.

Practical experience has indicated that a better luster is obtained at temperatures somewhat lower than 75 degrees F. and many of the earlier ranges were regularly equipped with refrigerating units in order to maintain even lower temperatures. Experimental observation has also demonstrated that the quality of mercerization as measured by the absorption of caustic increases with drop in the temperature, until a maximum is approached for each concentration of caustic. Again, theoretical considerations of physical chemical measurements likewise show that increased swelling of the fiber could be expected to occur with decreased temperature. Thus, in practice, we find mercerizing ranges being operated at temperatures from 50 degrees to 80 degrees F. (summer temperatures), with caustic of from 38 to 65 degrees Tw. and occasionally higher. Without cooling, 45 to 50 degrees Tw. caustic seems to be the lowest concentration that will produce good luster at ordinary temperatures. The higher temperatures give somewhat better wetting and penetration of the caustic, while cold concentrated caustic of 65 degrees Tw. or more, is absorbed so slowly that one foreign machine employs a system of progressive saturation, starting with 20 degree caustic. During operation, the temperature of the caustic in the saturator may rise considerably, the amount of which will depend on several factors coincident with the design, circulation of the caustic or lack of it, as well as the condition of the cloth. This increase in temperature is caused principally by the heat of the reaction in forming alkali-cellulose.

Heat of dilution is a second cause of this increase in temperature when wet goods are treated, while starch and other impurities may further increase this by reaction with the caustic, especially when grey goods are mercerized. A mercerizing range supposedly operating at ordinary temperatures may thus actually be running considerably higher. This has actually been observed by one authority to increase as much as 60 degrees F. from a starting temperature of 60 degrees F. Not only would this produce unevenness in luster, as the temperature increased, but might also impair the tensile strength. Circulation of the caustic, as well as installation of cold water cooling coils would help to minimize this effect, especially in the summer months. Novel results are sometimes obtained by the application of very low temperatures, such as a so-called transparent effect, as well as the ability to mercerize wool and cotton and silk and cotton mixtures. The caustic

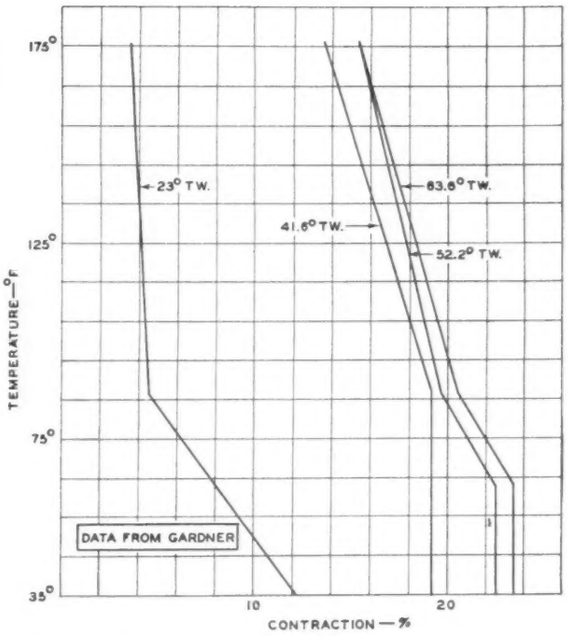


Fig. 3—This chart shows the relation between contraction of cotton yarn (time of mercerizing being constant at 1 minute) and temperatures for different caustic concentrations . . . . . .

As the temperature falls, the contraction increases. This effect is more pronounced in the lower concentrations. Little practical difference is noted from 86 degrees F. to 35 degrees F. in the mercerizing range, but above 86 regrees the contraction falls off. This curve was drawn from data in "Mercerization and Appretur" by Paul Gardner . . . . . .

removal in practice is quite complicated as well as protected by numerous patents, the discussion of which would be beyond the scope of this article.

The time required for caustic soda to react with cotton is quite short, especially with caustic in concentrations as used in mercerizing. Saturation of one half to three quarters of a minute is generally employed although study of the shrinkage curve shows this value to increase to a practical maximum at one minute. In the lower concentrations, the absorption by contrast proceeds slowly, increasing more or less uniformly with time for 30 minutes or more. Mercerizing in ranges is, therefore, generally arranged to operate with a time interval of 30 to 45 seconds from the start of the caustic saturation to the first water spray. This short time allowed by the design of the machines is sufficient to effect a satisfactory result only if the cotton is capable of being wet by the caustic in this time interval. Unless uniformly wet out, uneven mercerizing results, and to avoid this, grey fabrics are generally mercerized wet. To facilitate wetting, various wetting-out agents have been proposed as additions to the caustic bath. Many compounds of doubtful value have been suggested in the past, and until recently were not seriously considered since little or no improvement was observed by their use. During the last few years, however, many patents have been obtained on the use of wetting agents, most of which contain 60 per cent or more of phenol with other ingredients, some

J. ANDREW CLARK

Mr. Clark, the author of this article, is familiar to our readers as the author of the series on materials used in cotton piece goods finishing, completed in these columns last year, and reprinted as a booklet, "Finishing Materials".

Mr. Clark

He was graduated from R. I. State College in 1917, with an A.B.S. degree in chemical engineering. In 1917-18 he was chemist at River Spinning Co., leaving there to serve in the gas defense section of the Chemical Warfare Service. From 1918-1929 he was instructor of textile chemistry and dyeing at the R. I. School of Design, Providence; he was also engaged in professional chemical engineering. Since 1929 he has been in his present position as chief chemist at Dutchess Bleachery. He is a member of the American Association of Textile Chemists and Colorists and on the sub-committee for the analysis and standardization of sulphonated oils.—The Editor.

of which are quite effective in actual practice. Failure of all fibers to wet out, as well as insufficient time of saturation, are undoubtedly the reasons for double mercerization, since those fibers that are satisfactorily treated the first time will not improve with successive treatments. Those fibers that were, on the other hand, saturated for an insufficient interval of time, or not at all, are acted on by the second treatment with consequent improvement in the luster of the cloth. The increased speed of saturation as well as the completeness of this, effected by the addition of these wetting agents, is expected to yield results in one treatment comparable to double mercerization as run without these compounds. The elimination of the second treatment would thus more than compensate for the extra cost of the first run.

Little or no effect is noticeable in the application of tension when half-mercerizing with caustic of low concentration, but as the concentration increases to 40 degrees and over, luster is produced. In practice, it has been found that tension sufficient to hold the cloth to grey width is generally most satisfactory. Above this, no practical increase in luster is noted while below, grey width, operation of the frame to obtain this tension in the warp may be a little more difficult to control as a result of inability in obtaining measurements of the warp length while actually under tension on many ranges. Operators frequently estimate the overall tension by hand or a covered stick that they push down on the cloth in the frame. Some machines, however, are equipped with hydraulic regulators for this purpose, while the common practice is to operate the frame at a speed slightly in excess of that used for the saturator mangles to produce the necessary warp tension.

As mentioned earlier, the swelling of cotton fibers when treated with cold concentrated caustic without tension is accompanied by shrinkage in length with untwisting, while in addition, the fiber acquires a roughened surface. And although the fabric is changed in appearance with subsequent washing, luster has not been produced. If, however, tension is applied, the individual fibers become smooth and lustrous. This application of tension may be applied equally well during the saturation with caustic and until its subsequent removal, or the fabric may be saturated first, without tension, following which it may be applied during the second operation. In any event, the production of luster depends on the hydrolysis and removal of caustic occurring while the fibers are under tension. In actual practice, the cloth is generally under some warp tension during saturation in the usual range, while the filling is free to shrink. For example, a 39-inch oxford grey after singeing and steeping, may enter the saturator box at 36-inch and leave the mangle only 29-inch wide. During this period, however, the warp is under tension. The filling is then stretched to grey width on the frame before spraying with water. Both warp and filling are thus under tension during this treatment.

Inspection of a mercerized fabric with a low power microscope shows the yarns to be more compact than those in the untreated cloth. Loose fiber ends unacted on by the tension applied during treatment are swollen as well as having a felted appearance; a condition which detracts in some measure from the general luster. This is prevented generally by singeing, an operation which for this reason almost invariably precedes the caustic treatment.

(This discussion of Mercerization and its place in relation to other finishing operations, by Mr. Clark, will be concluded in next month's issue. The reader should retain his copy of the current installment.—The Editor.)

D. & S. Represent Preller's

D. & S. Engineering Co., textile engineers, P. O. Box 3017, North Charlotte Station, Charlotte, N. C., have been appointed as sales representatives of Preller's Leather Company, London, England, manufacturers of leather, Balata, hair, cotton and other types of belting and leather products. The Charlotte company will carry in stock Persian and Welsh calfskins for roller coverings in addition to various brands of leather for check straps, etc.

New Centrifugal Pumps

The Lawrence Pump and Engine Company, Lawrence, Mass., has just issued a six-page booklet announcing the Vortex "Black Arrow" single stage centrifugal pumps. These pumps are built in sizes from 2 to 14 inches inclusive for capacities from 30 to 10,000 gallons per minute and for heads up to 300 feet. They are of the double suction, horizontal split casing type, especially adapted for general pumping service.

Cobb Gets Patent on New Filling Detector

F. Gordon Cobb, vice-president, Pomona Manufacturing Company, Greensboro, N. C., has been granted a patent relating to a filling detector for looms, covering the broad idea of using a single filling feeler finger employing no grate, according to Paul B. Eaton, patent attorney, of Charlotte, N. C.

This device is manufactured by the Bahan Textile Machinery Company, of Greenville, S. C.

THE PIONEER--By William P. Jacobs

The second of a series, taken from Mr. Jacobs' new book, and presenting the life, record and achievements of some Southern textile pioneers . . .

THIS continues the reproduction in large part, in serial form, of "The Pioneer", by William P. Jacobs, begun on page 56 of the July issue. The first installment was devoted largely to the life of Captain Ellison A. Smyth. The present installment gives brief articles pertaining to some of the contemporary pioneers.

CONTEMPORARY PIONEERS

To complete the story of the life of Captain Smyth the several chapters following are each devoted to a brief picture of the life of one of those stalwart pioneers in the textile field whose accomplishments were largely contemporary with the efforts of Captain Smyth. They each had an important part in influencing the efforts of the Captain.

However, the reader is reminded that in these brief sketches no attempt is made at full portrayal. Each of them justifies a complete volume in itself if due credit is to be given. It is the author's hope that time will permit the early production of another and yet fuller volume than this limited edition . . . one in which the lives of all the leaders in southern textiles will be given ample and deserved recording. It is hoped that such succeeding volumes will assume the form of a complete, authentic recording of the history of the rise of the textile industry in the South, and of the valiant deeds of our hundreds of constructive textile leaders. May this volume serve as an introduction to the study of a field which deserves a permanent record.

Really this volume could add sketches of the lives of hundreds of others whose deeds in textile development were outstanding. Such honored names as Law, Geer, McCaughrin, Bailey, McKissick, Anderson, Johnson, Fitzgerald, Riegel, Kendall, Woodside, Self, Evins, Jones, Nicholson, Ligon, Gossett, Wright, Marchant, Henry, Hamrick, Webb, Dixon, Cramer, Sirrine, Poe, Hagood, Bruce, Elsas, Entwistle, Cole, Mebane, Roberts, Chapman, Arrington, and scores of others remind us of lives of unusual textile leaders, whose accomplishments justify far more than a passing notice. But space forbids. The following will suffice to illustrate the story.

DEXTER EDGAR CONVERSE

Dexter Edgar Converse was born on April 21, 1828, in the little town of Swanton, Vermont, the son of Orlin and Louisa Converse. His father died when he was only three years old, leaving him to the care of an uncle, Albert G. Brown of Three Rivers, Canada. Mr. Converse was a direct descendant of the pioneer Edmund Converse, who came to New England with Governor Winthrop in 1630. Growing up under the direction of his uncle, he engaged with him in the manufacture of woolen goods, and laid the foundation for that thorough knowledge in the art of textiles which was the mainspring of his success in after years.

At his majority, he accepted a position in a cotton mill in Cohoes, N. Y., which he held for five years. At Cohoes he was married to Miss Helen Twichell. After living in New York for five years, he came South, and became superintendent of a cotton mill at Lincolnton, N. C., where he remained for several months. It was before the days of railroads, and the journey by stage coach was a slow one.

In February of 1855 he settled at Bivingsville (now Glendale, S. C.) Having purchased an interest in the cotton mill there, his executive ability, his experience and success as a business man were at once recognized, and he soon became manager. This was the starting point of the D. E. Converse Company, under which title the Glendale Mills were incorporated in 1866.

In 1880 Mr. Converse, with some associates, formed the Clifton Manufacturing Company, under which three mills have sprung up. At Mr. Converse's death on October 4, 1899, he was a stockholder also in the Pacolet, Whitney and Spartan Mills.

He was active and prominent in the cotton mill industry in the South, and easily one of the foremost citizens of Spartanburg County. He was a quiet, conscientious, hard-working man, with a wonderfully sweet spirit, and utmost faith in his undertakings and in his fellowmen.

Mr. Converse loved the South—the country of his adoption—and in the War Between the States he enlisted in the Confederate Army; but his services were needed more as a manufacturer than as a soldier, and he returned home to hold a government position in the Glendale Mill, making cloth for the army.

He remained at Glendale until '91, when with his family he moved to Spartanburg, S. C., where he, his wife and daughter lived thereafter.

Though he was connected with all great charities of his section, and was always foremost in all plans for the public good, Mr. Converse is perhaps best known by the college which bears his name—Converse College of Spartanburg, S. C. To his generosity many women of the South owe their opportunity for a liberal education in a well equipped institution.

The statement of Mr. Converse's purpose, contained in the "Converse Concept"—a magazine of Converse College—on the occasion of his death, October, 1899, gives a remarkable insight into his life's ideals; and it is so striking that it is herein presented:

The purpose of D. E. Converse in founding Converse College:

"It is my opinion that the well being of any country depends much upon the culture of the women, and I have done what I could to found a college that would provide for women thorough and liberal culture; so that, for them, the highest motives may become clear purposes and fixed habits of life; and I desire that the instruction and influence of Converse College, be always such that the students may be enabled to see clearly, to decide wisely and act justly; and that they may learn to love God and Humanity and be faithful to truth and duty, so that their influence may be characterized by purity and power.

"It is also my desire and hope that Converse College be always truly religious, but never denominational. I believe that religion is essential to all that is purest and best in life, here and hereafter. I wish the college to be really, but liberally and tolerantly, Christian; for I believe that the revelation of God in Christ is for salvation; and I commend and commit the college to the love and guidance of God, and to the care, sympathy and fidelity of my fellowmen."

Such a seriousness of purpose, thoroughly typical

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of the man, offers the fundamental reason for his unusual life and its accomplishments.

LEROY SPRINGS

Colonel Leroy Springs, one of the foremost pioneers in the cotton manufacturing field, and equally as prominent in the banking, cotton oil, railroad, and insurance fields, was for many years perhaps the industry's busiest executive.

He was possessed with an unusual determination, which enabled him to successfully carry through his avowed intention of forcing each enterprise into which he entered into successful operation. It can be said to the credit of Colonel Springs that he probably enjoyed more business successes than most other prominent business men of the South. Anyone can start an enterprise, but it takes hard work, self sacrifice, determination, common sense, and a never-give-up spirit to succeed as signally as did Colonel Springs.

He was born on Springfield Plantation, near Fort Mill, on November 12, 1861, the son of A. Baxter and Julia Blandina (Baxter) Springs. His father was educated at law, but also farmed on an extensive scale; was president of a railroad; was director of two other railroads, and extensively interested in banking as well.

His father was also state senator, and a member of the South Carolina Convention which formed the Ordinance of Secession.

The ancestors of Leroy Springs came to this country from Holland and settled in New York in 1700.

Leroy Springs was a student at the University of North Carolina from 1878 to 1880. He married Grace Allison, daughter of Samuel E. White of Fort Mill, on December 28, 1892, who died in 1907. He was married a second time to Lena Jones, daughter of T. M. Jones of Pulaski, Tenn., on November 29, 1913.

Leaving the University, Colonel Springs entered the mercantile business; and became a salesman for the firm of Springs and Burwell, wholesale grocers, of Charlotte, N. C., in 1880, and there began a long, successful and most useful business career. The wide diversity of his interests; the great number of successful enterprises which he founded and headed, offer an unusual record. How one man could so successfully found and operate so many varied interests is easily a mystery to the average man, but Colonel Springs possessed unusual business ability and keen judgment which enabled him to enjoy exceptional accomplishments.

He founded Leroy Springs & Company, wholesale and retail merchandise in Lancaster, S. C. in 1884; later operated as the Lancaster Mercantile Company. He was president of this company for sixteen years. He organized the firm of Springs & Shannon at Camden, S. C. in 1885; the Kershaw Mercantile and Banking Company in 1888, at Kershaw, S. C.; the Heath Springs Banking and Mercantile Company at Heath Springs, S. C. in 1889; the Bank of Lancaster, S. C. in 1889; the Bank of Kershaw in Kershaw, S. C. in 1904. He organized the Lancaster Cotton Mills, one of the largest in the South, in 1896 at Lancaster, S. C.; the Eureka Cotton Mills and the Springstein Mills at Chester, S. C. in 1899, the Kershaw Cotton Mills at Kershaw, S. C. in 1913. He reorganized the two mills of the Fort Mill Manufacturing Company, Fort Mill, S. C. in 1904. They were built in 1884 and 1889 respectively.

In 1928 Colonel Springs was the president of seven cotton mill companies, president of the Bank of Lancaster, the Lancaster and Chester Railway, the Lansford Water and Power Company of Lancaster; Vice-President of the Bank of Kershaw, S. C.; Director of the Catawba Fertilizer Company, the Lancaster Cotton Oil Company, First National Bank of Camden, National Exchange Bank of Chester, Bank of Kershaw, Savings Bank of Fort Mill, the Southern Home Fire Insurance Company of Charleston, the Prudential Fire Insurance Company of Greenville, Trustee of the Mutual Life Insurance Company of New York; Director of the American Trust Company of Charlotte; Vice-President of the Columbia, S. C. National Bank. He was director of the Charleston, Columbia & Augusta Railway at the time it was merged with the Southern Railway.

Colonel Springs was a member of the Chamber of Commerce of the United States, member of the American Manufacturers Association, of the American Bankers Association, of the South Carolina Bankers Association, of the N. E. Manufacturers Association, of the New York and New Orleans Cotton Exchanges, of the Southern Manufacturers Club of Charlotte, and of the Cotton Manufacturers Association of South Carolina, of which for a time he was vice-president.

He served as Colonel on the staff of Governor John P. Richardson from 1886 until 1890. He was Chairman of the Board of Trustees of the Lancaster Graded Schools for a period. He was a delegate to the Democratic National Convention four successive times up to 1920, and a delegate-at-large in 1924. He was actively interested in many other enterprises.

Indeed, the enterprise and energy of Colonel Leroy Springs was most outstanding. At the time of his death, in 1931, he was probably officially connected with more separate corporations than any one business man that the state of South Carolina has produced. Few men ever enjoyed such great success; few South Carolinians ever occupied such a prominent position of leadership as did Leroy Springs.

He believed that business success should be founded on sound ideals, on good habits, strict attention to business responsibilities, good associates, strict integrity, honest dealing, and the setting of business persistently before pleasure.

Colonel Springs was a Presbyterian and a Democrat, and one of South Carolina's greatest benefactors. His contributions, financially and otherwise, to the development of commerce, industry, finance, agriculture, religion and education in the state were enormous. To Colonel Springs should go the lion's share of the credit for much of the progress in these fields which South Carolina has made during the last half century.

The mills which Colonel Springs founded, and many of his other interests are, since his death, under the capable management of his son and successor, Captain Elliott White Springs. Captain Springs is already, following in his father's footsteps, a successful manufacturer in his own right. He was one of America's greatest aces during the World War, and is also a writer of note.

LEWIS W. PARKER

One of the most magnetic figures in the textile industry of the South and of the United States for that matter, was Lewis W. Parker, of Greenville, S. C. His untimely death in 1916 cut short a career that had been full of inspiring achievement as well as tragedy. The financial losses that came to Mr. Parker at the outbreak of the European War and caused his retirement as the head of a great group of mills, represented even a greater loss to the enterprise of the nation. His friends and enemies, for in life he appeared to have both, admit that he was a real personage, a man of dynamic force and a broad human spirit that made him unique as well as beloved.

Lewis Parker was a business man. He was trained as a lawyer and a banker, following in the footsteps of a distinguished father. He was born in Abbeville, S. C., in 1865, and after an attendance in the public schools of his native town he pursued his college

studies and graduated from law school. At the age of twenty-three he began the practice of law in Greenville, S. C. While pursuing his profession he became interested in business, and in fact his practice was entirely along business lines. He became a good corporation lawyer, and was made a director on the board of several companies.

In 1897 he withdrew from active practice to take charge of the Victor Manufacturing Company of Greer, S. C., in order, it is said, to prevent the mill from going into the hands of a receiver. He saved the situation and thus found himself, as the phrase goes, a manufacturer. In a few years this young lawyer had become the greatest cotton manufacturer in South Carolina.

In this work he was ably seconded by his brother, T. F. Parker. In order to show the scope of his operations, which even in this day of big business is impressive, the following outline of his textile operations is given, setting forth the mills in which he was the commanding spirit, and either president or treasurer or both:

Apalache Mills, Arlington, S. C.; 20,000 spindles; 500 looms; capital, $350,000.
Capital City Mills, Columbia, S. C.; 15,000 spindles; 300 looms; capital, $310,000.
Richland Cotton Mills, Columbia, S. C.; 26,000 spindles; 720 looms; capital, $300,000.
Granby Cotton Mills, Columbia, S. C.; 57,000 spindles; 1,560 looms; capital $800,000.
Olympia Cotton Mills, Columbia, S. C.; 101,000 spindles; 2,400 looms; capital, $1,750,000.
Monaghan Mills, Greenville, S. C.; 60,000 spindles; 1,560 looms, capital, $700,000.
Victor Manufacturing Co., Greer, S. C.; 60,000 spindles; 1,524 looms; capital, $700,000.

Under Mr. Parker's control were mills with a total of 340,000 spindles and 8,564 looms, representing a capitalization of $4,910,000. The production covered a wide range, including print cloths, sheetings, shirting, nainsooks, dimities, etc.

Mr. Parker was also active as a banker. In 1891 he organized the Piedmont Savings & Investment Co., became president of the Bank of Greer, and a director in several banks in Greenville, S. C.

He was one of the busiest men in the South or in the whole country for that matter, but he found time to direct and organize one of the most successful systems for the care, well being and general comfort of his thousands of employes, that ever was instituted in the United States. At his Monaghan Mills, for example, the homes of his operatives consisted of model cottages. There was a mill hospital, Y. M. C. A. and Y. W. C. A. Lawns, gardens and athletic fields gave the little manufacturing center an air of distinction and comfort. No employer in the United States identified himself more closely with the welfare of his employes than Mr. Parker, and his broad generosity was reciprocated to a degree approaching veneration.

DANIEL AUGUSTUS TOMPKINS

No brief sketch can do justice to the manifold activities of Daniel Augustus Tompkins and his work as a builder of the New South. Few men in the United States had a more diversified career or better exemplified in their lives the constructive spirit. Unlike most of the successful men of the South, Mr. Tompkins possessed little of the characteristics of the merchant. He was essentially a pioneer, a man of far-sighted vision who saw clearly the possibilities of the future and who fortunately possessed the talents of an executive and an organizer which enabled him to practicalize his ideas.

It was more in what he did for others in the way of enabling them to help themselves than in what he did for himself that made the life of D. A. Tompkins an example to his community.

A broad outline of his activities is impressive even at a casual glance. He was among the first to recognize the possibilities of the cotton oil industry and make it one of the leading enterprises of the South. He was a builder of cotton mills. He designed and furnished machinery to industrial plants in his territory. He was a publicist, a journalist, a writer, a promoter of education and a pioneer in the establishment of trade schools that have equipped so many able men for the conduct of the South's textile industry.

He did much to instill in the South a spirit of thrift that had become almost a lost virtue among the American people. He strove untiringly for the establishment of building and loan associations in Southern communities. His fine philosophy with respect to the social qualities which make men valuable citizens had much of the flavor of Benjamin Franklin. Never posing as a philanthropist, he was at all times a friend of his fellow men. He did more than help them. He helped them to help themselves. He succeeded Captain Smyth as a member of the United States Industrial Commission. This body, as is probably well known, was formed to consider the problems presented by the growing complexities of our modern industrial life. The report of this commission, presented in nineteen volumes, covered a vast field involving almost every phase of America's business activities—industry, agriculture, transportation, labor and kindred questions.

Mr. Tompkins was a product of the old South. He was born on a plantation in Edgefield County, S. C., in 1851, and with the exception of a few years spent as a student at the Rensselaer Polytechnic Institute at Troy, N. Y., an apprenticeship served under old John Fritz at the Bethlehem Iron Works in Bethlehem, Pa., and a year in Germany in the introduction of American machinery, his life was passed chiefly in the South until his death in 1917. It probably is not going too far to say that he was then the foremost citizen of Charlotte, N. C.

It was in 1882, after Mr. Tompkins had finished his studies, served his apprenticeship and developed his talents abroad that he settled in Charlotte and hung out his sign as an engineer, machinist and contractor. He obtained the agency for the leading machinery manufacturers, and became very active in the building and installation of mills and power plants of various sorts.

The first shining example of the use of his vision came in his activities in the building of the South's infant cotton oil industry. He saw its possibilities, and he set to work to realize them. Ever since the invention of Whitney's gin, cotton seed had been the South's most objectionable waste product, the bane of the planter's life. Mr. Tompkins saw that it was a real economic waste, and for several years his activities were devoted to the building and financing of cotton oil mills. He lived to see the industry one of the most prosperous in the South, backed by capital amounting to hundreds of millions, and a product also running into hundreds of millions annually. He not only strove to make the cotton oil business profitable, but he fought to make it clean, to insist upon a superior product, one that would be highly acceptable to the world as a food.

The larger activities of Mr. Tompkins, if any distinction can be made, probably were devoted to the upbuilding of the southern textile industry. Here also he displayed the extraordinary breadth of vision of a Franklin. "Help to establish manufactures at home," he said, "and help to get foreign markets and ships to bring back three dollars and upwards where we now bring back one."

Mr. Tompkins always felt that the South never would become really great so long as it contented itself merely with producing cotton, the raw material.

(Continued on page 87)

THE SLASHER ROOM

Part 2

By Joseph W. St. Rock

(This continues the discussion of the slasher room, its equipment, etc., by Mr. St. Rock, which was begun on page 38 of the July issue of COTTON. *It is suggested that the reader clip the several installments in this series, beginning with the one in the July issue, for filing.—*THE EDITOR.*)*

The Cylinders

THE cylinders, whether geared or not, should be given careful attention. They should be true-running, and the journals inspected for wear. A good journal packing should be used for both inlet and outlet, to prevent escape of condensation water. The manhole should be removed at least once a year and the inside of the cylinder inspected for the condition of the water trough and stay rods. This inspection is seldom carried out, but it certainly should be done for safety's sake.

All cylinders do not contain troughs; some contain buckets. There is always more trouble with the removal of condensation from cylinders equipped with steam traps than with cylinders equipped with control instruments. This will be found true on cold mornings, when it is difficult to secure the desired speed of the slasher, which will sometimes take as long as one hour, thus slowing up production. Usually the atmospheric condition of the room is given the blame for this, but if one will investigate, he will find that water has accumulated in the cylinder because the capacity of the trap is not sufficient. One reason for this accumulation of water is condensation of the steam in the steam line during the night, and that is why a drain on the steam line, as previously explained, should be installed to remove all condensation in the line before the steam is admitted to the cylinder.

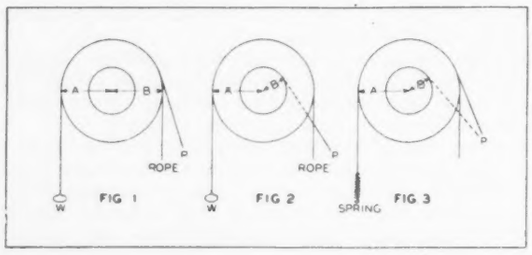
The rapidity with which the steam condenses in the cylinder depends a great deal on the quality of the steam furnished to the slasher line, by the stopping of the slasher often and for too long at a time, such as is required in the slashing of colored work, especially where several colors are in the sheet and a lease is required or a separate comb for each color is necessary, as this is more effectively taken at the slasher. With automatic control, these conditions are overcome. When possible, cylinders should be tinned, as this prevents sticking which often occurs especially when freshly cooked size is taken in.

The Drag Roll

The condition and size of the drag roll governs the behavior of the sheet of yarn, and the proper tension, also the greater part of stretch on the slasher. Ordinarily the drag roll is the same in diameter as the size roll, or as commonly called, the copper roll. On some makes they are smaller in diameter. When the drag roll is smaller in diameter than the size roll, both being driven at the same speed, the size roll is driven faster. The reason for this is to allow the drag roll to be built up with a cloth, first to give a cushion for the passing warp, which will eliminate slack yarn (that is, prevent a part of the sheet rolling onto the loom beam), and, next, it gives the slasher man an opportunity to build up the roll to give the proper tension to the sheet of warp so that the ends will break apart at the split rods better, and, if the cylinders are not geared, enough tension can be applied to turn them.

Only enough cloth should be applied to the roll so that the sheet between the size roll and the large cylinder will not deflect more than ¼-inch with geared cylinders, and only enough to turn the cylinders if they are not geared. The more cloth on the drag roll, the more the stretch. Although there is not a slasher man living who can run a slasher properly without stretching, the machine can be run with a very small percentage of stretch. Much of the stretch is caused by the changes in the counts of yarn with the condition of the slasher remaining the same. Also, if the amount of twist in the yarn on the same counts is varied, this will cause a different amount of stretch unless the drag roll is properly clothed.

Although the condition of the drag roll causes the greatest stretch of the yarn, there are other places that stretch the yarn. The manner of weighting the



section beams will oftentimes cause unnecessary stretch. An example: A section beam filled with 42s yarn, 420 ends, 40,000 yards, including the weight of the section beam, will weigh approximately 600 pounds. The head of the section beam is 26 inches in diameter, and the diameter of the barrel is 9 inches; the slasher is running 27 yards per minute. As the section beam is supported by its arbors, the weight on one side is counterbalanced by the other, and with no weight on the beam to check its movement, an initial force of about 4½ pounds is required to start the beam rolling, and this will diminish to practically nothing when the beam has attained its speed.

The centrifugal force of the body of yarn and beam is: $.00034 \times 300 \times 1.08 \times 37.4^2 = 164.087$ pounds. Then it would require a weight applied equal to this force to stop the beam instantly, were it not that the slasher is equipped with a slack roll to take up the excess rolling after stopping the slasher; and slashers not equipped with cones have a countershaft with a balance wheel driven from the drive shaft, and

those equipped with cones are counter-balanced by the fan. Both the balance wheel and the fan pick up enough momentum while in motion to cause the sheet of yarn to go through the process of slashing several yards before coming to a stop, and such weight as figured above is not necessary. Therefore, only a small weight, sometimes less than 2 pounds, will stop the beam without undue stretch and will prevent kinking of the sheet. A few examples will be given to show the pull necessary to overcome the weight suspended to a rope on a section beam when full and nearly empty. (See Fig. 1.)

When the beam is full, the force P is 4½ pounds and the weight W is 2 pounds, therefore the weight will keep the yarn free from kinks and no stretch will occur. But when the beam is nearly empty (see Fig. 2) the weight W, still being 2 pounds, then, by the laws of revolving levers of the third-class, the force necessary at P to overcome W is:

$$P = \frac{W \times (a + b)}{b}, \text{ } b \text{ being .33 feet, and } a \text{ being 1.083 feet.}$$

$$\text{Then } \frac{2 \times (.33 + 1.083)}{.33} = 8.57 \text{ pounds}$$

As this force is distributed among 420 ends, a force of 1/50th pound will be exerted on each end to cause stretch, which we admit is small.

Now for another example. Let us consider the beam to be weighted down by a rope and a spring (see Fig. 3) replacing the weight, attached to the floor, a harness spring being used. The diameter of the steel is 1/16-inch, the diameter of the spring is 7/8-inch, the radius of the spring is 7/16-inch, the length of the spring is 8-inch, stretched 4 inches longer.

The initial force that must be applied to overcome the deflection of the spring is:

$$P = \frac{Pi \times G \times D^4 \times F}{32 \times R^2 \times L,} \text{ in which}$$

Pi, 3.1416; G, Modulus of elasticity for torsion of steel (12,600,000 pounds per square inch); D, diameter of steel, .0625; F, deflection 4 inches; L, length of spring before stretching; R, radius of spring, .4375-inch. Then substituting:

$$P = \frac{3.1416 \times 12{,}600{,}000 \times .0625^4 \times 4}{32 \times .4375^2 \times 8} =$$

5 pounds approximately, which will be the pull of the spring which is taken as the weight in the first example. Then the necessary pull to be applied at P =

$$\frac{5 \times (.33 + 1.083)}{.33} = 21.41 \text{ pounds.}$$

Now, as the force on the spring is continued, the pull on the rope increases. This creates another force to overcome, called the resistance force of the rope, which is approximately $5 \times .19 = .95$ pound to be added to the total pull of the yarn or a pull necessary of 22.33 pounds. By the way, .19 is the coefficient of rolling friction between rope and iron.

There are several different ways by which the section beams are weighted, but these two examples will show what difference in stretch one will have if he has not given this matter some attention.

Stretch will also occur between the size rolls should the front roll be smaller in diameter than the finisher. If, by calipering these rolls, the first roll is found smaller than the other, this should be remedied. The difference may be so little that the writer would prefer to sacrifice a little stretch there rather than to place it as the finisher. If the smaller roll is used as the finisher, a slack will take place between the rolls that would do more damage than the stretch that would be caused there. The slack caused between the rolls by the greater delivery of the front roll will roll the yarn, and when these rolls are presented to the split rods, breakage of yarn will result, and oftentimes when the slasher tender is busy at other points this broken yarn accumulates in the comb and causes a smash, waste of yarn and delay in production.

There is an unavoidable stretch that occurs between the size roll and the cylinder, especially when the cylinders are not geared. We all know that yarn gains in breaking strength when wet, and the reason is that it stretches more when wet than when dry. The tension of the sheet between these two points is governed by the amount of cloth on the drag roll, whether the cylinders are geared or not.

The tension here as before mentioned should be no more than ¼-inch in deflection. If the sheet is tighter than this, one would know that there is too much cloth on the drag roll, and some should be removed to avoid too much stretching. This condition will show up especially when a change is made in the set from a heavy sley to a light sley. With geared cylinders, too much cloth on the drag roll will be apparent from watching the sheet, as it will creep on the cylinder. There is a cylinder drive releasing motion now on the market, nick-named by many the "free-wheeling motion", which will eliminate the creeping of the sheet and thus eliminate some of the stretch. Too much cloth on the drag roll will also show up at the split rod. If the sheet separates at more than three inches away from the first split rod, this is a warning of probable stretch due to the condition just mentioned.

This is one of the reasons why the writer does not advocate the use of an opening rod between the cylinder and the size vat. When an opening rod is used here, it should be leased as the first split rod; the break of the sheet at the latter position will at times reach the guide roll and there remains only the skill of the slasher tenders to determine whether the sheet is too tight or not, and all slasher men do not possess this skill.

Some stretch will occur between the drag roll and the loom beam, caused by having the friction too tight. Many slashers are still equipped with hand-wheel frictions. Careful attention has to be given to these, and a skilled slasher man will always maintain the tension so that very little stretch will result here. With the lever friction, a perfect tension can be obtained without fear of too much stretch, and the skill

of the slasher man with this need not be what is necessary with the hand-wheel friction. There is now on the market a tension regulating device that regulates the tension of the lever friction, as the beam fills. One inexpensive method is the one illustrated on page 40 of the December 1933 issue of COTTON.

Gear Diagram of Slashers

In the carding and spinning departments, the overseer usually has a gearing diagram of his machines. This is because he wants and needs a record of the gears used on his machines, also so that he may obtain the draft constant, the twist constant, the production constant, etc. Very few slasher men have similar diagrams in their possession. They are just as important to the overseer of slashing as the similar diagrams are to the overseers of the other departments.

The gearing diagram of a single cylinder slasher is shown in Fig. 4, the cylinder being geared and the

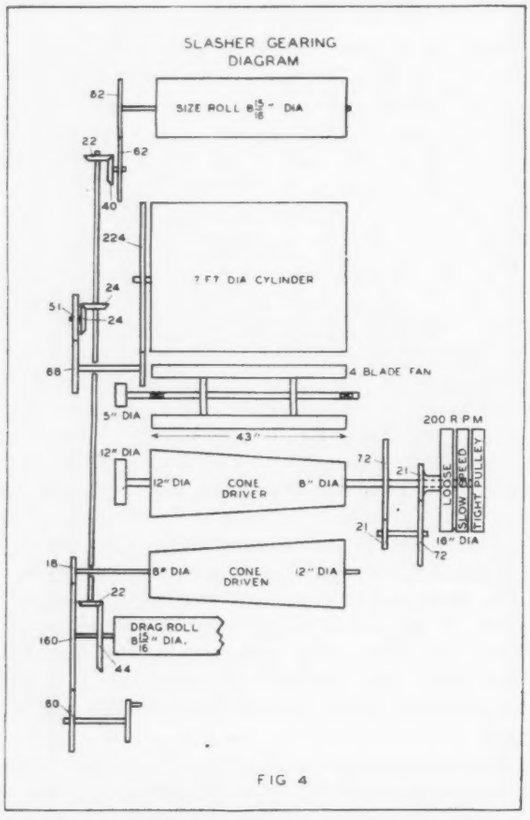


FIG. 4

Slasher Gearing Diagram; a single cylinder machine is shown here—the principle is applicable to two-cylinder slashers . . . .

drag roll of the same diameter as the size roll. If the drag roll were smaller in diameter than the size roll, the bevel gear on the drag roll would contain but 40 teeth, the same as the bevel gear of the compound at the size vat, but as both are of the same diameter it was necessary to have a larger gear on the drag roll; in this case a 44-tooth gear is used. Now, it can be seen that if both gears were of the same size and any cloth were placed on the drag roll, there would be excessive stretch. As it is, several yards of cloth can be wound on the drag roll to regulate the tension and afford a good cushion for the sheet of yarn. Again, the cloth on the drag roll is not only to regulate the tension, but the cushion thus formed preserves the condition of the yarn.

Let us say the drag roll is to run 33 r. p. m., and as it is .781 yards in circumference it will deliver 33 $\times$ .780 = 25.773 yards of yarn, and the size roll will deliver,

$$\frac{25.773 \times 44 \times 22 \times 62}{22 \times 40 \times 62} = 28.35 \text{ yards.}$$

By this it will be seen that the drag roll will have to be increased in diameter,

$$28.35 : 25.77 = 8.9375 : ?$$

$$\frac{28.35 \times 8.9375}{25.773} = 9.831\text{-inch,}$$

which is an increase of nearly 1-inch in diameter,or ½-inch in cloth applied to the drag roll.

We will now proceed to construct a speed board. The driving cone in this case being 43 inches long, and ordinarily a four-inch belt is used.

We then will divide our board into 11 equal parts (see Fig. 5). This board may be 1-inch thick, 8 inches wide, painted black and marked off with white lines.

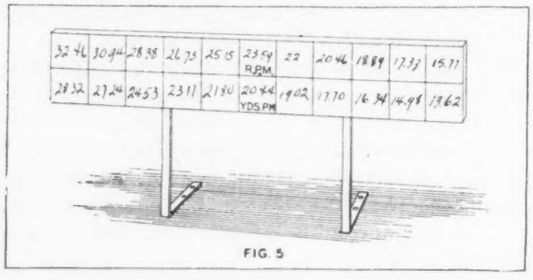


FIG. 5

Now, then, with the conditions as in the gear diagram and the belt at the largest end of the driving cone, the cone running 200 r. p. m. the speed in yards per minute, taking the center of the belt as the cone diameter, and 10 inches the diameter of the drag roll, would be,

$$\frac{200 \times 11.812 \times 18 \times 10 \times 3.1416}{8.188 \times 160 \times 36} =$$

28.32 yards per minute, 100 per cent.

The r. p. m. would be,

$$\frac{200 \times 11.812 \times 18}{8.188 \times 160} = 32.458$$

These figures are placed in the left-hand squares as shown. We must now find the same information for the smaller end of the cone.

$$\frac{200 \times 8.188 \times 18 \times 10 \times 3.1416}{11.812 \times 160 \times 36} =$$

13.618 yds. per minute.

The r. p. m. of the drag roll would be,

$$\frac{200 \times 8.188 \times 18}{11.812 \times 160} = 15.766.$$

These figures are placed in the right-hand

squares. Then figure in like manner the speed of the drag roll for each position as shown.

The production of a slasher per hour is figured thus:

$$\frac{\text{r. p. m. drag roll} \times \text{Cir. drag roll} \times 60 \text{ ends}}{36 \times 840 \times \text{Counts}}$$

From this we figure the production constant:

$$\frac{\text{dia. drag roll} \times 3.1416 \times 60}{36 \times 840}$$

$$\frac{10 \times 3.1416 \times 60}{36 \times 840} = .0618$$

The slasher production (100 per cent per hour) is then simplified:

$$\frac{\text{Prod. constant} \times \text{r. p. m. drag roll} \times \text{ends}}{\text{Counts}}$$

The efficiency of a slasher greatly depends upon the class of work being run, whether it be plain, heavy or light counts, light or heavy sley, colored work; whether the sheet is counted, twisted, leased with comb in back or dropped in the comb at the front of the slasher. A good slasher man should average 75 per cent efficiency.

The horse-power required to drive a slasher is generally left to the mechanic to figure with the aid of the builder, but neither can give a definite horse-power required with the slasher loaded, as neither knows what will be in the slasher. Hence, oftentimes, if a motor is to be installed, a motor of too great capacity is installed with of course greater cost. As it would take considerable space to explain how to figure this, I will only give the formula for use, which has given very accurate results.

For a 7 x 5, single size vat, with shafting to drive:

H.P. = 2.44 + [.000063 × (wgt. of yarn + wgt. of beams)]

For a 7 x 5 double size vat, with shafting to drive:

H.P. = 2.75 + [.000025 × (wgt. of yarn + wgt. of beams)]

For a 7-foot single cylinder and size vat, with shafting to drive:

H.P. = 1.58 + [.000063 × (wgt. of yarn + wgt. of beams)]

If the slasher is equipped with but one size roll, as is often the case when running rayon, the constant 1.58 is changed to 1.53.

Formula for Speed—without Automatic Control

As we all know, the speed at which we should run the slasher depends on the counts of yarn, the sley of the goods, the amount of moisture that must be left in the yarn, and the percentage of size which depends greatly on the pick per inch to be woven. I will give first a formula to be used when the slasher is not equipped with automatic controls. The speed as figured by this formula will leave approximately 6 per cent moisture and apply approximately 8 per cent of size to the yarn. I refer to a 7x5 slasher with no carrying rolls, light to medium picks per inch.

$$\frac{3536 \times \text{counts}}{\text{No. of Ends}} = \text{yds per minute}$$

For a 7x5 slasher with carrying rolls,

$$\frac{4530 \times \text{counts}}{\text{No. of Ends}} = \text{yds. per minute}$$

If the picks per inch are to be say 80 to 125, or say 12 per cent size is required left in the yarn, the first formula becomes:

$$\frac{3360 \times \text{counts}}{\text{No. of Ends}}$$

And the second,

$$\frac{3718 \times \text{counts}}{\text{No. of Ends.}}$$

It must be remembered here that the viscosity of the size must be changed, that is, the size formula used for one count of yarn cannot always be used for another with the desired results because the proper speed has been figured. This will be proven shortly.

Obtaining the Speed on Slashers With Controls

The following formulas have been derived by the writer from actual practice and proven by laboratory tests, and found quite accurate:

Let Co = Counts of yarn
a = Temperature of large cylinder
b = Temperature of small cylinder
c = Temperature of size
S = Speed in yards per minute
E = Number of ends in sheet
$\%$ = Percentage of moisture
W = Weight of sheet per running yard in ounces
f = Factor for various counts.

Then the speed formula is as follows:

$$S = \frac{\% \ (a + b - c) + f}{\frac{E \times 16}{840 \times Co}} \quad \text{when} \quad \frac{E \times 16}{840 \times Co} = W$$

Then, the formula simplified takes the following form:

$$S = \frac{\% \ (a + b - c) + f}{W}$$

From this formula we have the following equation:

$$\% \ (a + b - c) + f = S \times W$$

Transposing "f" we have

$$\% \ (a + b - c) = S \times W - f$$

Solving for $\%$ we have

$$\% = \frac{(S \times W) - f}{A + b - c}$$

Solving likewise for "f", we have

$$f = \frac{S \times W}{\% \ (a + b - c)}$$

With the same equation, we wish to find "a" when "b" is known, or "b" when "a" is known.

$$\% \ (a + b - c) + f = S \times W$$

Transposing,

$$a + b - c = \frac{(S \times W) - f}{\%}$$

Solving for "a" when "b" is known,

$$a = \left(\frac{(S \times W) + f}{\%} \right) + c - b$$

When "a" is known,

$$b = \left(\frac{(S \times W) - f}{\%} \right) + c - a$$

As the settings of temperature in the cylinder will vary 14 degrees,

$$a = \frac{a + b}{2} + 7; \quad b = \frac{a + b}{2} - 7$$

The equation therefore becomes:

$$\frac{a + b}{2} + 7 = \frac{(S \times W) - f}{\%} + c$$

Transposing, and solving for "a":

$$a = \left(\frac{\frac{(S \times W) - f}{\%} + c}{2} \right) + 7$$

And for "b":

$$b = \left(\frac{\frac{(S \times W) - f}{\%} + c}{2} \right) - 7$$

After finding the value of one, the other can be found more easily, thus:

$$a = b + 14, \text{ or } b = a - 14$$

The value of "f" depends on the counts of yarn, the weight per running yard, atmospheric conditions, the desired percentage of size, etc. One can prepare a table for himself. The writer will assist anyone in preparing such a table if the necessary conditions are sent him. A good value for medium counts is from 40 to 60, and with good judgment one can prepare a table to his satisfaction, to suit his conditions.

Cut Marker Gearing Diagram

It is also good to have a cut marker diagram of the slasher, and for this, one of the most common arrangements used will be given. It matters not if the measuring roll is running in contact with the drag roll, or if it is driven by contact with the yarn near the cylinder. All must be figured in the same manner. It may seem unimportant, but it is of vital aid to the slasher man, especially in a mill where varying lengths of cuts are required, because of the difference in the shrinkage of the cloth in finishing to the desired length.

In the cut marker gearing diagram (Fig. 6) the measuring roll circumference is 18.8496 (.5236 yard), and 50 turns of the crank or gear 64 will register one cut on the clock. The cut marker constant is figured thus (let 1 represent the cut gear):

$$\frac{6 \times 3.1416 \times 1 \times 64 \times 50 \times 20}{36 \times 1 \times 1 \times 20} = 1675.52$$

It is evident from this that the yards per minute would be: $\frac{\text{constant}}{\text{gear}} \times$ r.p.m. measuring roll; and the yards per cut would be constant ÷ gear, and the gear required for a desired length of cut would be constant ÷ yards per cut. From this we find that the length

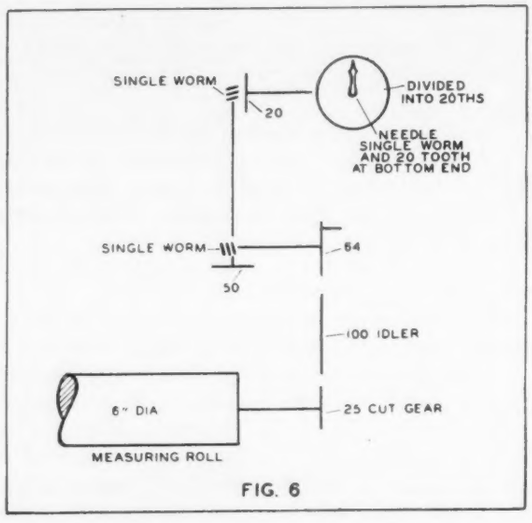


FIG. 6

of cuts is inversely proportional to the gear used. Knowing this, and knowing the length of cut that one gear will measure, and not knowing the cut marker constant, we can find the gear desired to measure a desired length. Let cg_1 represent the known gear; 1_1 the length; cg_2 the required gear; and 1_2 the desired length. Then:

$$cg_2 = \frac{cg_1 \times 1_1}{1_2}; \text{ and } 1_2 = \frac{cg_1 \times 1_1}{cg_2}$$

A 25 cut gear as in the diagram, with a known constant, will measure 1675.52 ÷ 25 = 67.02 yards. Now it is necessary to find what length of cut a 28 gear will measure. Substituting:

$$\frac{25 \times 67.02}{28} = 59.84 \text{ yards.}$$

Using the constant, we get 1675.5 ÷ 28 = 59.84 yards.

Weight of Squeeze Rolls

The weight of the squeeze roll plays an important part in the proper penetration of the size into the yarn. If the roll is too light, it will not force enough size through the yarn; if it is too heavy, it will squeeze more or less out. I have always found it better to have a light roll and weight it down for best results when conditions permitted. A rule will be given for

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the proper weight of the squeeze roll that has given fairly good results:

Rule: Extract the square root of the weight of one yard of the sheet of yarn and multiply by 1,000. *Example:* What should be the proper weight of the squeeze rolls having a set of 38s yarn, containing 4,720 ends.

$$\sqrt{\frac{4720}{840 \times 38}} \times 1{,}000 = 397 \text{ pounds.}$$

There are several methods of weighting squeeze rolls. It is done by suspending a weight from a leather strap at each end of the roll; some will weight the roll down by screw pressure especially constructed. A good method which gives a wide range of pressure is by the weight and lever of the third class, as in Fig. 7.

If this lever is constructed as shown, then

$$\frac{b+A}{b} = \frac{P}{W}; \quad \frac{P \times b}{a+b} = W, \text{ and } \frac{W \times (a+b)}{b} = P$$

The first notch is 11 inches from center of fixed point; the center of the block is 8 inches from fixed point; the length of the lever is 28 inches; and the notches are 2 inches apart.

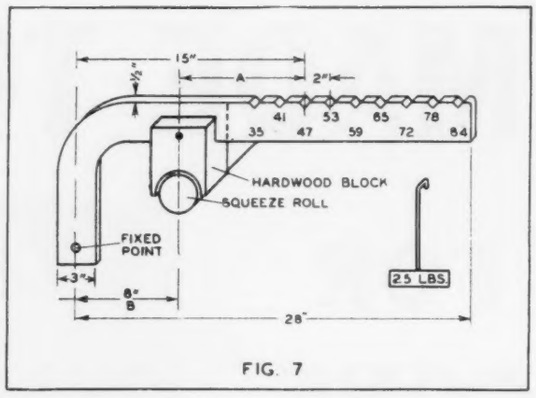


FIG. 7

The weight suspended from either notch will exert the pressure as shown. This includes the weight of the lever. One of these levers is placed at each end of the finisher roll. In the above example, suppose the weight of the roll is 235 pounds. Then (397 — 285) ÷ 2 = 56 pounds. The weight would be hung in either the fourth or fifth notch.

(To be continued)

Exposition on Heating, Ventilating and Air Conditioning

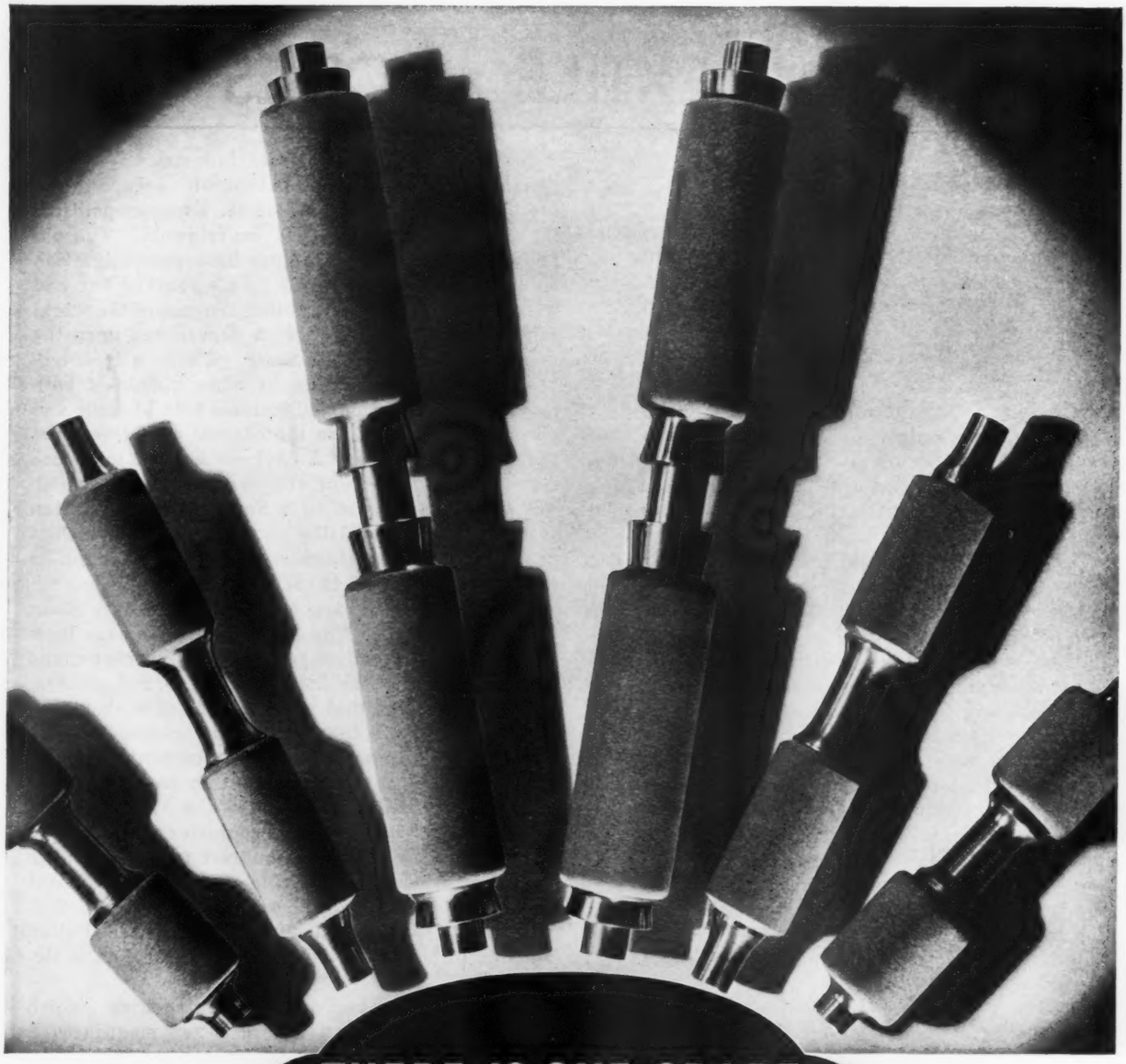
Air conditioning, one of America's newest industries, will be brought into the industrial market place along with one of the oldest industries, heating, and its partner, ventilation, at the Fourth International Heating & Ventilating Exposition, to be held in the new International Amphitheatre in Chicago January 27-31, 1936. The growing popular understanding of heating, ventilating and air conditioning as related factors which influence health and comfort is evidenced by the number of commercial installations this year and by the active interest in the forthcoming exhibit.

The development of the heating, ventilating, and air conditioning industries is the story of the evolution of human comfort. As in a magazine serial we get the story in installments. The first chapters deal with the primitive shelters in which heat as well as smoke went out through a hole in the roof. Natural apertures like windows and doors, even when they evolved from crudity, were still factors of disturbance in the problem of getting correct heating and adjusted ventilation. Architecture had to advance through many centuries before the year-round temperature requirements of comfortable living could be accommodated. Now gradually people have come to expect the comfort of good heating facilities. Going from frigid weather into well heated buildings has become a course of action adopted without training.

But what of the opposite in summer? This summer, for the first time and only in the greater cities, the number of air conditioning installations is such that the average citizen is made to realize that it is possible for him to take refuge from the heat in summer, just as he would from the cold in winter—by going indoors. This season, the response to an avoidance of the summer heat is becoming similarly automatic. People prefer not to eat in a hot restaurant when one that is air conditioned is available. Now, this summer, for the first time the number of installations in public buildings, etc., is marked. The variety of buildings in which air conditioning systems are being installed may be judged by considering a recent compilation of air conditioning sales in Chicago last year. Of 239 installations, 49 were for private offices, 35 for theatres, 29 for restaurants, 26 for general offices, 24 for residences, 6 for hotels, and 5 for hospitals. The remaining 65 were installed in beauty shops, clothing, drug, fur and shoe stores.

Those whose interest in the development of the new industry has only now been awakened will find at the show in Chicago next year an illustrated synopsis of the story. In this theatre of industries one will witness all of the new developments in design and equipment and also the perfected or revised forms of what has already been introduced. Expert advice on installations will be available. To illustrate the solution in terms of specific apparatus there will be at the exposition comprehensive displays of equipment such as hydraulic, steam heating, air, refrigerating, control, central heating, insulating and auxiliaries.

The conduct of the exposition and all details of exhibit arrangement and leasing are in charge of the International Exposition Company of Grand Central Place, New York, and will as heretofore be under the personal direction of Charles F. Roth.



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CURRENT TEXTILE TOPICS ....

Talk of the Month

RETAIL business in the middle of July was a good augury for wholesale activity and industrial production. In fact the retail buyers were at the same time giving evidence of confidence in the fall prospects by entering the wholesale markets. The cotton manufacturers were finding plenty of signs that requirements were potentially large, but were still facing the hesitation that had possessed consumers through the long months of political interference with normal economic affairs.

Obstacle race for the mills, with high Washington hurdles

Mills have now had over four months of curtailed operations, as reflected in the government figures on cotton consumption. The totals since February have been below the same months of 1933 and under those in 1934 except for June. In this voluntary and organized curtailment, manufacturers have taken one bearish club out of the hands of buyers.

They could not look for speculative buying, however, having to depend upon buyers sticking close to indicated requirements when mills themselves were unavoidably creating uncertainty for purchasers by their drive against payment of processing taxes. In its maneuvers on the AAA to stall the processing-tax issue, its dragging of the Cabinet-committee report and its proclamation of a "magna charta" for labor, the government has raised some new high hurdles for cotton mills in the obstacle race started under the since discredited NRA.

Mills have shown a very healthy attitude through the period of extreme inactivity, setting a precedent that should prove of permanent advantage. The National Association of Hosiery Manufacturers has been pointing out to its members the logical idea of using statistics of buying and selling to regulate their production. It has long been recognized that production ahead of demand, even when the prospects are good for a substantial turnover, is prejudicial to the realization of fair profits. In the spring and summer curtailment, the cotton mills have taken the best course to enable them to demand fair prices for the fall business, whatever its volume.

Meantime, the industry has had enough of government in its business, which was inaugurated by the Administration as "partnership". The appointment of the Cabinet committee to investigate conditions from all angles is another sample of where government falls down. Private industry sees a problem and attacks it promptly. The committee operated as expected, if not as hoped. Prompt action was the desideratum, especially on such a matter as the Japanese imports. Was it forthcoming? Hardly, though all the statistics available were ready to hand practically at once. But politics works that way: a ruinous process for private industry.

Another stalling action is that with regard to the processing tax. Facts are facts, however political factors may seek to justify experiments. The old regions of cotton manufacture have seen migration of plants around the world. This country has had warnings for 20 or 30 years that the rest of the world can, if necessary, shake off its dependence upon the great cotton crop of the South. There is incontrovertible danger of losing to other countries both manufacture of cotton and markets both at home and abroad for the staple in the current conditions. Yet the proponents of the AAA have worked to secure forcible continuance of the processing tax (which has now been declared by a Federal court in Boston to be unconstitutional) by another measure which is challenged as unconstitutional. Before a test can be made, meantime, the havoc will continue.

Japan and other parts of the Far East have given the old regions of cotton manufacture a severe blow from which they cannot recover. It is perhaps true that migration of the industry is a normal process, but hardly logical that political influence should be exerted to deprive this country of holding to what it has, by unnecessarily making competitive conditions internationally worse than they have been. The political attitude, as influenced by the AAA, has been to encourage the low-wage countries, even to the usurpation of the American market for goods and to the exportation of our machinery. Some equipment has gone to Brazil and the warning recently of William P. Jacobs, secretary-treasurer of the Cotton Manufacturers' Association of South Carolina is significant.

Contrary to the veritable antagonism which Washington has shown toward cotton manufacture, and adding to its obstacles for the future, is the real partnership which the government has established with organized labor. A southern cotton manufacturer is cited by the New York *Journal of Commerce* as saying that the industry made a gross mistake in its ready compliance with loosely drawn NRA statutes and a further error in accepting the government strike settlement last year, that amounted to nothing more than a political stall and a friendly gesture toward labor unions. Now that great center of cotton manufacture faces the prospect of a vicious unionism being foisted on them from Washington.

Mill Situation New England

LOW operation of machinery, while awaiting the long anticipated acceleration of business in cotton goods, was the order of the day for the mills of New England during the past month. As it was figured that the fine-goods mills of the country in July were down to less than 50 per cent of capacity under the continued code schedules, it appears that the northern mills have participated to the full with the rest of the cotton industry to avoid

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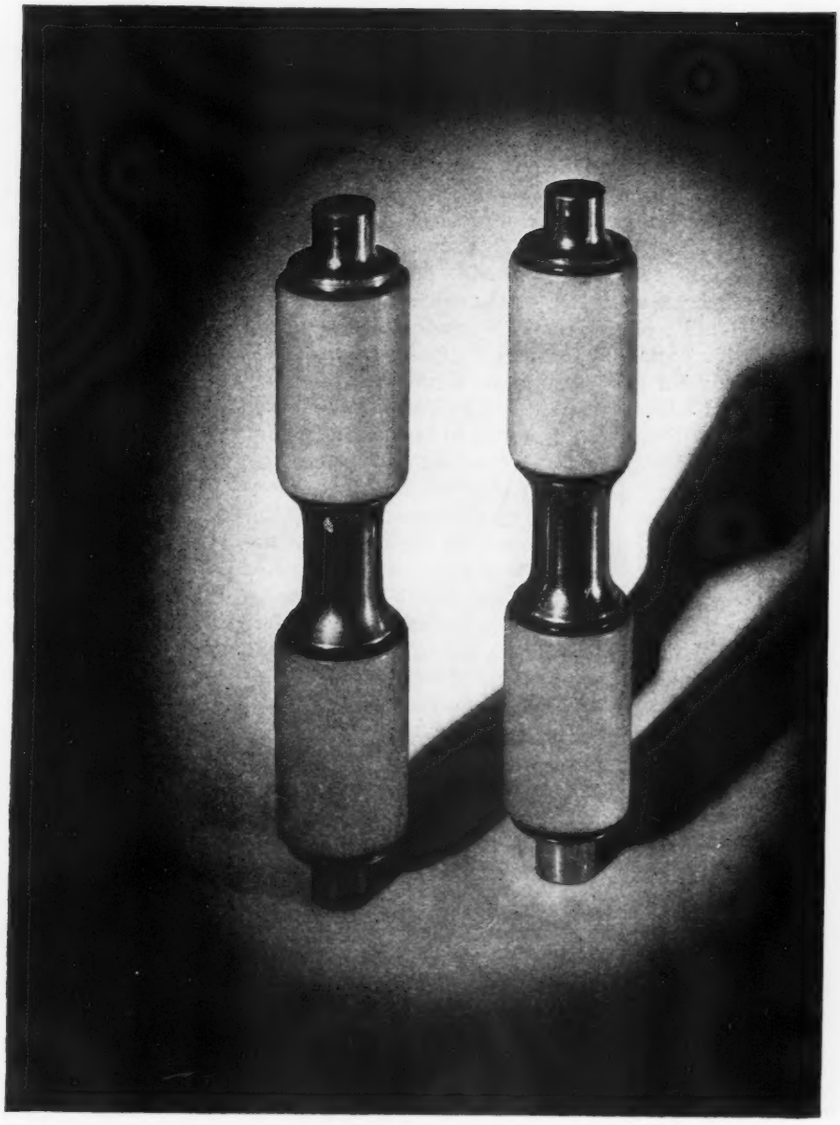

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price-weakening accumulations at the approach of an acive buying period.

Rigid measures were taken in the spring and early summer by the leading manufacturers controlling large plants to forestall pressure of stocks that would be burdensome. As it was, the mills had difficulty even up to the middle of July, to maintain prices, although for many weeks they had already been at unprofitable levels. Vacations were common the first part of that month. Much machinery was shut down against the time when market conditions should make resumption reasonable.

Caution remained the policy of buyers, so a better inquiry for goods was more than ordinarily significant of latent demand. In the Fall River market at mid-July there was reported to be a fair amount of business under way and the trade showed a better feeling toward the outlook, though not over-confident in the continuance of complicated textile situation, with new angles to confuse the future of doing business. Among the first encouraging signs of betterment was the resumption of full operations by the Queen City Cotton Mills of Burlington, Vt., after a month of idleness and a return of the Naumkeag Steam Cotton Company, Salem, Mass., to activity after suspension the first half of July.

New England furnished the outstanding development of the whole cotton situation since the invalidation of the NRA when, on Tuesday, July 16, the United States Circuit Court of Appeals at Boston declared the processing tax invalid. The Hoosac Cotton Mills Corporation in the spring of 1934 had taken a step to test the constitutionality of the processing tax, by a suit in the United States District Court. It was defeated, but appealed. The case was heard by the Circuit Court in the spring of this year and the corporation was sustained in its contention that the tax was unconstitutional.

New England long bore the brunt of harsh AAA criticism because of its efforts to secure modification —not elimination—of the benefit payments. The district has suffered severe loss of cotton manufacturing equipment, much of it by reason of the excessive cost and burden of new investment under the processing tax. The immediate response to the decision of the Circuit Court was an expression of opinion by leaders that this ruling—though the tax was still subject to further litigation through an appeal to the Supreme Court by the government—would put an end to the persistent movement of mill liquidation in New England. It was felt that the decision would be sustained by the Supreme Court.

In this connection, another decision, to do with local taxation affecting mills, is of interest. On the same day as the decision was made on the processing tax, a judge of the Superior Court in Providence, R. I., ruled that the Lawton Spinning Company of Woonsocket had been over-assessed $380,550 on its real estate in 1933 and $327,300 in 1934 by the city board of assessors. In an official notice it was said that "the evidence is that the cotton textile business in New England has been in a declining state since 1920 and that such decline has caused a relatively low range of prices at which textile mills are selling and were selling in 1933 and 1934 and for some time previously." Since taxation has been a growing bane of industry everywhere, this decision is of far-reaching import.

At the time of this writing the wool manufacturing industry of New England was facing the threat of serious labor troubles and strikes were already pestering individual mills. When mill leaders and people outside the textile industry are striving to conserve the remaining assets of a dwindling business, union labor heads made bold, partly through the stimulating effect of strong espousal of their cause by the government, to continue a wrecking policy to the disregard of its effect upon the very workers whom they are presumed to represent. For more and more the owners of mills are committed to the policy of giving up as unnecessary and unfair obstacles are thrown in the way of operating their plants.

It would not take much effort by the U. T. W. toward coercion to start a further exodus of mills from New England, both cotton and woolen. The union, in its effort to gain domination of the labor situation in the cotton mills—which long before the birth of the U. T. W. were according to workers the privilege of collective bargaining—may drive out the workers from the mills and the mills from the district. It is this state of affairs which has awakened community spirit in New England on behalf of the industry. The efforts of such men as Bishop Peterson of Manchester, N. H., are unqualifiedly more in the interest of the workers in the mills than are those shown by union heads in recent years.

COMMENT ON THE COTTON MARKET

New Orleans, July 17, 1935.

ALTHOUGH some important developments came to the surface during the past month, there was not much animation in the cotton market, trading in spots and futures, except for what was done in pool cotton, having been very light, with values ruling within a narrow range. However, contract values, compared with one month ago, show moderately higher, most on July, while middling spots are only a shade better.

The government's estimate as to this year's acreage was somewhat smaller than generally expected, but this feature was offset by the more favorable weather of late for the growing crop. There was disappointment in the activity of spots, resulting in poor exports, even for this usually dull period of the season. No encouragement was derived from conditions in the goods market where trading has been quiet for sometime past. Much attention, however, was attracted to the recent Federal court adverse decisions bearing on features of the AAA. For the present the trade appears to be waiting for the government's first cotton crop forecast of the season, and announcement thereafter, or sometime during August, of the nature of the expected loan value on this year's crop, now in the making.

GOVERNMENT ACREAGE AND CROP COMPARATIVES

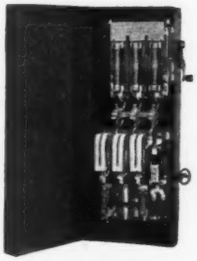
	This year	Last year
Acres in cultivation, July 1st, est.	29,166,000	27,883,000
Picked acres	(!)	26,987,000
Average yield per acre, lbs.	(!)	170.9
Production, bales of 500 lbs. gross wt.	(!)	9,636,000

The government's first cotton crop forecast for this year will be released on August 8. Compared with last year, the acreage shows an increase of 4.6 per cent, sales of fertilizer for the first six months of 1935 were reported as 12 per cent more than for the corresponding period of 1934, labor is cheap and in ample supply, there is now a good season in the ground, especially in the western belt. On the other hand, except in the southern third of the belt, the crop is generally late, there is the threat of damage by insects, particularly by the boll weevil, and from plant disease in parts of the Southwest, and a late crop is usu-

For Low-Cost Operation

G-E screenless, open textile motor. Free passage of lint through the motor is facilitated by fans on rotor, by large, smooth ventilating passages, and special varnish treatment of windings

in Lint-Laden Atmosphere



G-E switch for convenient, efficient control of G-E screenless, open textile motor

THE General Electric screenless, open textile motor — for spinning-frame drives, twisting-frame drives, and other applications in lint-laden atmosphere—offers you definite cost-reducing advantages.

The special design of this motor provides for ready passage of lint through the motor, thus effectively eliminating the need for screening or enclosure. This and other design and construction features are your assurance that G-E screenless, open textile motors will give you the following operating advantages:

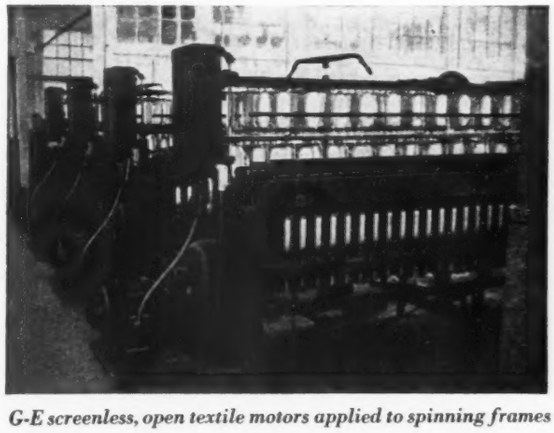
1. ***Low maintenance***—Because there are no screens or other loose parts to handle or clean. Streamlined air passages pass lint readily, and cleaning is minimized.

2. ***Longer bearing life*** — Because hard-tin-babbitted, accurately ground bearing linings are used in sleeve-bearing motors. In ball-bearing motors, cartridge-type dust-tight housings permit disassembly without exposing the bearings; bearing cleanliness means long life.

3. ***Dependable service*** — Because of inbuilt reliability and scientific design that give these motors the operating characteristics best suited for textile service.

Get these operating benefits for your mill by installing G-E screenless, open textile motors. Investigate, also, other cost-reducing equipment, such as power-generating and transmission apparatus, and wire and cable, which General Electric makes for the textile industry.

An experienced sales engineer in the nearest G-E office will be glad to help you select the right equipment to meet your electrical requirements efficiently and economically. For additional information, simply write or call the G-E office nearest you. General Electric, Schenectady, N. Y.



G-E screenless, open textile motors applied to spinning frames

020-150

GENERAL ELECTRIC

ally exposed to injury in event of an early killing frost. Of late the weather inland has been more favorable, which is reflected in somewhat more favorable crop advices from the interior, except that reports of weevil increasing have been more numerous.

WORLD'S CONSUMPTION OF COTTON

During May— Bales—	This season	Last season
American	987,000	1,171,000
Foreign	1,174,000	1,030,000
All kinds	2,161,000	2,201,000
From Aug. 1 to May 31		
American	9,556 000	11,756,000
Foreign	11,750,000	9,733.000
All kinds	21,306,000	21,489,000

As noted in this table the world continues to use less of American and more of the foreign product, due largely to the value of American being higher than world prices for competitive growths, mainly the result of the loan value on American.

BRITISH BOARD OF TRADE REPORT FOR JUNE

Year—	1935	1934	1933
Exports of yarn, pounds	12,000,000	11,000,000	11,000,000
Exports of cloth, yards	138,000,000	149,000,000	142 000,000

CENSUS REPORT FOR JUNE

United States— Bales—	This season	Last season
Consumption of lint during June in Cotton Growing States	313,512	292,576
In New England States	55,152	59,851
In All Other States	17,282	10,835
In the United States	385,946	363,262
Consumption of lint, 11 months, in Cotton Growing States	3,976,222	4,260,027
In New England States	764.056	925,111
In All Other States	211,789	156,164
In the United States	4,952,067	5,340,302
Mill stocks, June 30th	882,947	1,326,089
Stocks in public storage & whs., June 30th	6,077,634	5,984,939
Stocks in mills, pub. stg. & whs., June 30th	6,960,581	7,311,028
Stocks in mills, pub. stg. & whs., May 31st	7,539,377	7,982,330
Active spindles during June	22,709,200	24,621,334

AMERICAN COTTON

August 1st to July 12th— Bales..	This season	Last season
In sight (marketed)	9,045,000	13,097,000
Exports from the U. S., incl. Canada	4,891,000	7,531,000
Spinners takings, world	10,836,000	14.012 000
Stocks at all U. S. ports, July 12th	1,179,000	2,505,000

WORLD'S VISIBLE SUPPLY OF COTTON

July 12th— Bales—	This year	Last year
American	3,817,000	5,839,000
Other kinds	1,673,000	2,266,000
All kinds	5,490,000	8,105,000

As to foreign crop developments thus far this year, recently there was an estimate, from a private source, indicating an increase of 10 per cent in the acreage in India. Washington advices were to effect that the Brazilian crop points to 32 per cent larger than last year, and Russian advices indicated a larger acreage in that country. The disposition in foreign cotton growing countries, therefore, seems to be to enlarge the acreage and increase consumption of foreign growths, which, naturally, is to the detriment of the United States, especially to the South.

TOTAL AVERAGE RAINFALL IN TEXAS, IN INCHES

Year—	1935	1934	1933	1932	Normal
June	5.00	0.82	0.78	3.05	3.20
Nov. 1st to June 30th	26.41	17.62	16.36	23.96	20.27

The Domestic Trade Outlook is Brighter

There is a feeling of optimism in general trade centers. Recent Washington press advices are to the effect that predictions are for a sharp upturn in business next autumn. Very large expenditures of government money are anticipated when the P.W.A. program gets going shortly. The important steel industry is recovering rapidly for this period of the year, construction work is increasing, and prospects are for larger cotton and grain crops, harvesting and marketing of which will increase employment. The American Federation of Labor, in its monthly business survey, predicts business gains by next fall will lift production "higher than at any time since 1929."

What the Southern Mills Are Doing

Samoset Cotton Mills, Talladega, Ala., have completed the installation of a number of new large package long draft spinning frames, approximating 5,000 spindles.

Flint River Cotton Mills, Albany, Ga., have purchased 48, 1921 model Saco-Lowell cards and other equipment.

Atlanta Woolen Mills, Atlanta, Ga., have erected a one-story addition, and completed alterations and improvements in the mill.

Swift Manufacturing Company, Columbus, Ga., recently completed installation of several new long draft spinning frames and novelty twisters.

Southern Silk Mills, Kernersville, N. C., have erected a one-story mill addition; a sprinkler system has been installed throughout the plant.

Cascade Rayon Mills, Mooresville, N. C., recently installed 150 new looms, and also an H-W rayon yarn conditioner which was purchased from the Industrial Dryer Corp.

Oxford Cotton Mills, Oxford, N. C., have installed electric water coolers throughout the mill.

The property of Schwarzenbach-Huber Co., at Covington, Va., has been purchased by J. Spencer Love and associates of Burlington, N. C. It will be remodeled and equipped as a rayon weaving mill.

The Knit-Ease Company, formerly of Gastonia, N. C., is now located at Hendersonville, N. C. The company manufactures boucle yarns.

Pilot Full-Fashioned Hosiery Co., Valdese, N. C., recently purchased from Industrial Dryer Corporation an H-W conditioner for setting twist.

The interests of F. A. Yoder in the Burke Hosiery Mills, Hickory, N. C., have been purchased by J. A. Abernathy in partnership with F. L. Elliott, who has retained his half interest.

Adell Yarn Mills, Stony Point, N. C., which have been closed for about a year, have been purchased by the Killingsly Worsted Mills Company, of Danielson, Conn. The new company will revamp the plant for the production of yarns used in the manufacture of worsted fabrics.

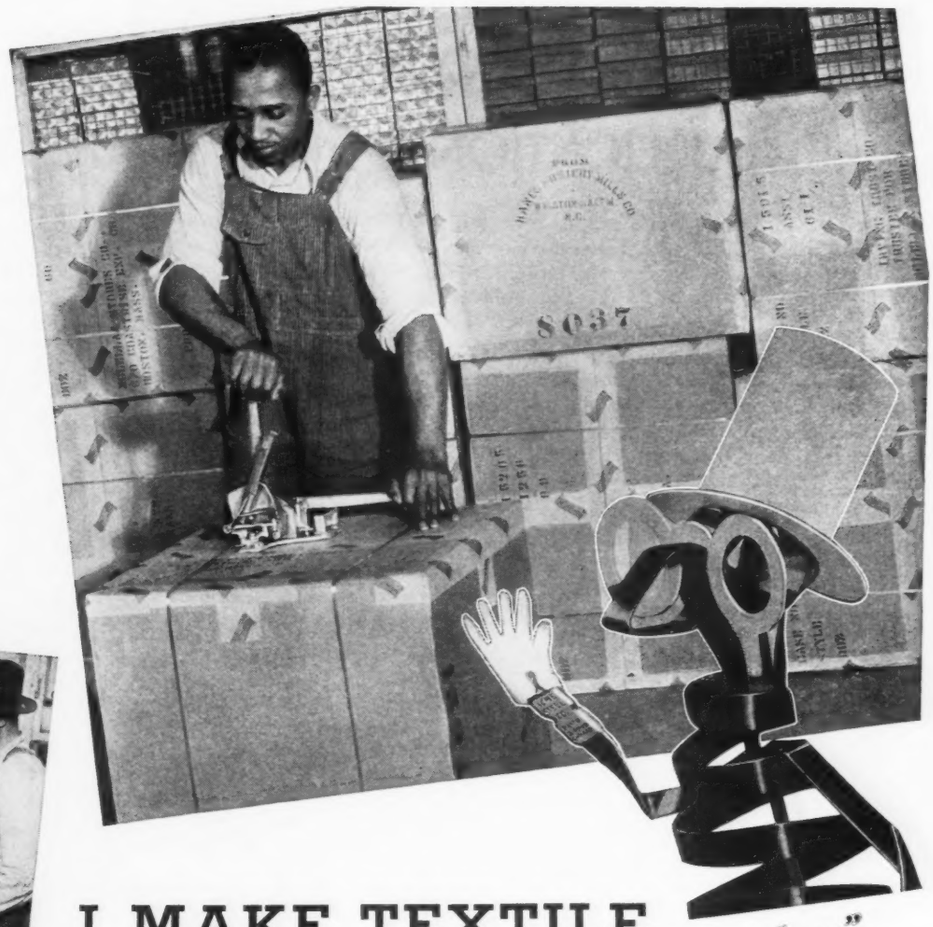
The plant at High Shoals, N. C., formerly the High Shoals plant of Manville-Jenckes Corp., has been sold to Alfred Moore, president of the Jackson Mills, of Wellford, and Iva, S. C. It is understood Mr. Moore and his associates will soon put the High Shoals plant in operation.

Cedartown Textile, Inc., and Macon Textiles, Inc., are the firms organized by the Uxbridge Worsted Company, of Uxbridge, Mass., to operate the plants recently acquired by them at Cedartown, where they purchased the Standard Cotton Mills, and at Macon, where they acquired the Adams-Swirles Cotton Mills plant.

Stockholders of Rhyne-Houser Manufacturing Co., at Cherryville, N. C., have purchased the interests of the estate of the late D. E. Rhyne in the mill. Dr. F. M. Houser is president, and A. H. Huss secretary-treasurer.

Salisbury Cotton Mills, Salisbury, N. C., are installing a Morrison sanforizing machine and a package dyeing machine purchased from H. W. Butterworth & Sons Company.

Martinat Hosiery Mills, Valdese, N. C., are building a finishing division, 40x40 feet, in which modern equipment is to be installed.



Faster work, stronger bales, better looking bales, with Acme Bale Ties and Seals.

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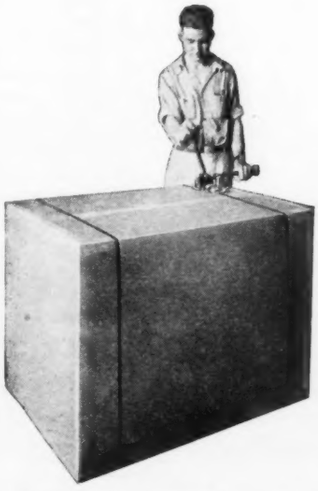
All you folks shipping textiles—whether in bales, cases, or what not—can save some money! That is, if you're not already using Acme Steelstrap. Hundreds of mills have been using this reinforcing band for years.

Scientifically administered, Acme Steelstrap permits the use of lighter "packages" without sacrificing strength. Closure of packages can be speeded up, better looking shipments obtained.

And now, I'm wrapping Steelstrap in a patented, waterproof package called "Acme Annular Wrap"—so that it reaches you perfectly clean. Soiling of products is avoided.

Write me about your shipping packages. I'll be pleased to send you tools, seals and strap for trial. I can show you the way to make your products "Bound to get there" economically.

Doc. *Steelstrap*



Corrugated boxes are made snug and strong—to carry as much as 200 pounds of textiles—with Acme Steelstrap. Wood cases, too, are benefited by my Steelstrap treatments.

Acme Steelstrap

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ATLANTA · NEW ORLEANS · SAN FRANCISCO · BOSTON · BROOKLYN

New Textile Equipment and Publications . . .

New Tension Device for Shuttles, Fed into Shuttle from Battery, to Eliminate Mis-Threads, Etc.

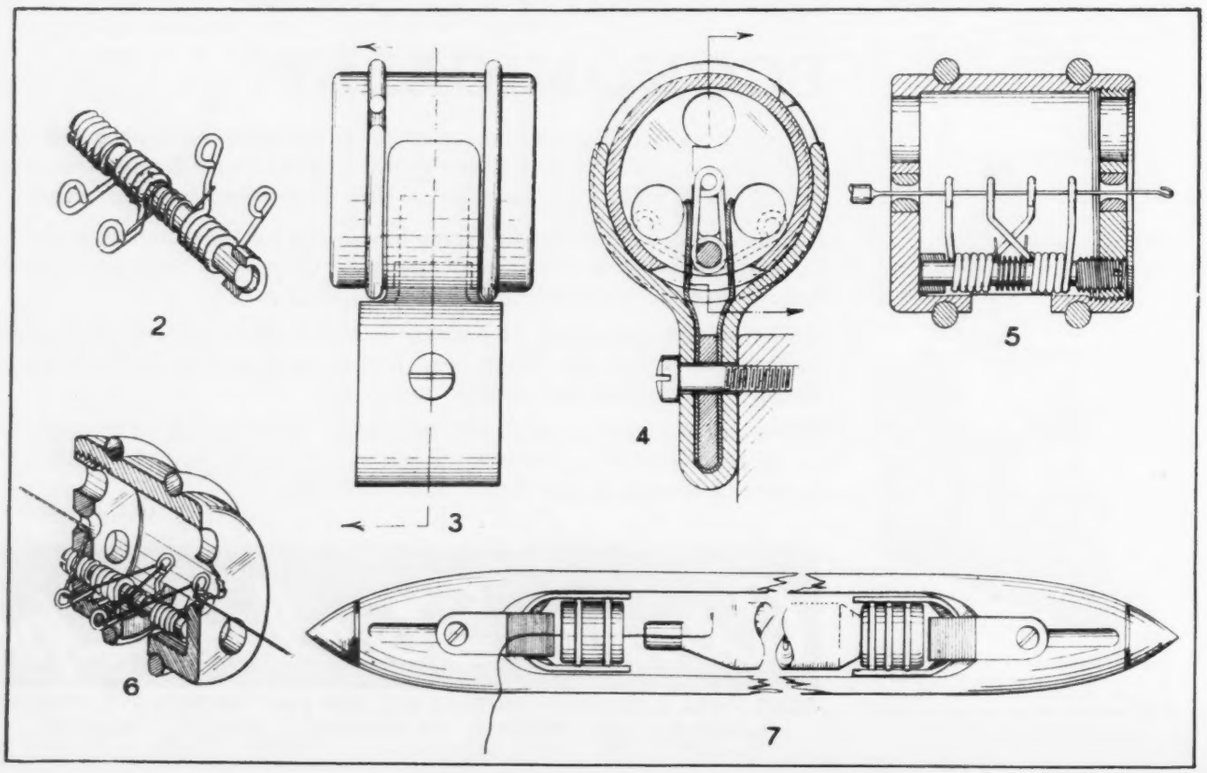
A radically different type of tension device for use on bobbin-changing looms has been invented by William E. Lundgren, development engineer, Slater Mill, Webster, Mass., which, it is explained, eliminates misthreading of the shuttle and resultant loose picks and shiners. It may be installed on all existing types of automatic looms.

The new device, which is clearly illustrated in the accompanying sketches and photographs, comprises essentially a small hollow steel plug which is threaded to the bobbin, with accessories to hold the plugs in the loom battery and a specially devised clamp for threading of the plug in a simple way. Before describing the device in detail, it might be mentioned that, when a loom is ready for operation, a bobbin threaded to a plug is placed in the shuttle, and the shuttle is thrown into motion. When a bobbin is run empty, it is ejected into the bobbin can, together with its plug, and a fresh bobbin with its plug takes its place in the shuttle in practically the customary manner. An addition has been built onto the battery to accommodate the plugs, which are handled automatically by the battery, the same as the bobbins.

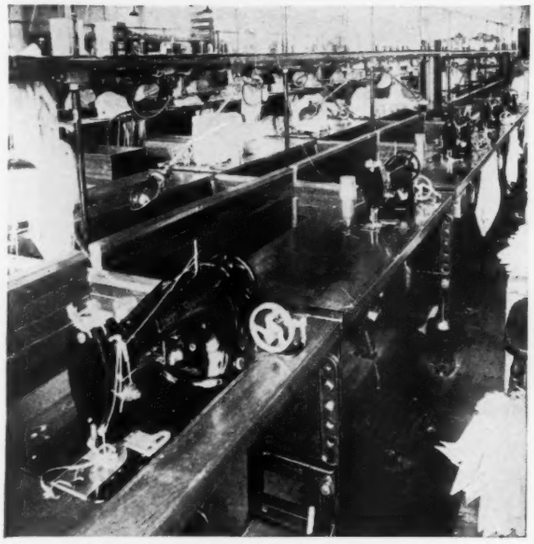
A view of a shuttle equipped with the plug is shown in Fig. 1, with a separate view of a bobbin and the plug below. As stated, the heart of the device is the plug, a small cylinder of about the same diameter as the butt end of a ring bobbin, and fitted with two rings on the outside similar to those on a Northrop loom bobbin. Inside of the plug are two sets of light wire arms (see Fig. 2), each pair spread apart by a fine spring much the same way as the arms of a safety pin are spread. At the end of each arm is a loop or eyelet. When the plug is placed into the threading clamp (see Fig. 3 and Fig. 4), these loops are aligned with two holes in the ends of the plug. The thread is drawn through the plug with a wire much the same as a button hook is employed in buttoning shoes (see Fig. 5). When the plug is removed from the clamp, the loops are spread apart by their springs (see Fig. 6), and the tension is fully established. The thread now flows over a zig-zag course through the eyelets and out through the exit hole in the plug. Variations in diameter of wire and number of coils are used in the springs to provide for fine adjustment of the plug to cope with differences in filling. Fig. 7 shows a plain view of a shuttle with the bobbin and plug in place.

A simple addition has been devised to go onto the standard loom battery, which is in effect an auxiliary maga-

Fig. 1, above, showing the shuttle with plug and bobbin in place, and also view of plug; below, Figs. 2 to 7, illustrating the plug . . .



Only a YOUNGSTER-



A view of some of the new Lockstitch machines installed in the Williamsport, Pa., plant of Smith Levine & Harris, makers of fine dress shirts and pajamas.

but making a record in fast company!

OCCASIONALLY a youngster steps into the big leagues and makes good right from the start. Usually he is the product of a good prep school coach or some former big leaguer who has sharpened the boy's natural talents.

Similarly, the Union Special Lockstitch has its background of engineering experience, being built by an organization with a long standing tradition of producing winners.

And similarly, although announced only six months ago, it is already establishing records of high speed quality production.

The Union Special Lockstitch has earned the unqualified approval of its users for whom it is cutting sewing costs and increasing production. It is living up to Union Special's high standard of performance, fit in every way for a place in the Union Special Line.

Write for full details or see our local representative. Let us show you how this Union Special can produce sewing room economies for you too.

UNION SPECIAL MACHINE COMPANY
400 N. Franklin Street Chicago, Illinois

REPEAT ORDERS TELL THE STORY!

Less than 3 weeks after 28 Lockstitch Machines were installed in one of the leading woolen mills, a duplicate order was placed for 28 more, to double the savings in production costs made by the first battery.

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A well known eastern knitting mill was among the first to install the new Lockstitch machines—starting with 6 units. Records quickly showed 16.2% greater production. As a result the company has now installed 10 additional units.

•

In Pennsylvania, a shirt maker installed 3 new Lockstitch units. The results showed such conclusive superiority that an order for 5 more was placed immediately.

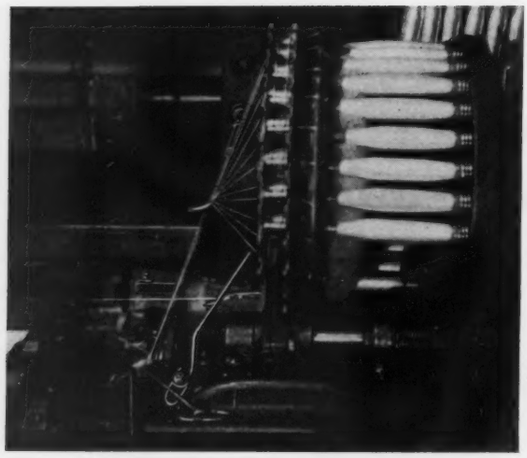
•

11 new Lockstitch machines and then 11 more in less than 6 months' time is the way another garment manufacturer has solved the problem of reducing sewing costs.

•

Although one new user of Union Special Lockstitch machines started in with only a single unit, the savings were so attractive that he has since installed 9 more.

Union Special LOCKSTITCH



This view shows the polished bar referred to, and the filling going from the shuttle to the fell of the cloth may also be seen. Note addition to battery to hold plugs; also note that butts of bobbin are away from cloth . . .

Another view of the Lundgren device, showing the shuttle just after transfer. The threading clamp may be seen just back of the battery.

zine for the plugs operating in unison with the bobbin battery. See photograph. This auxiliary has a small hammer which knocks the plugs into the shuttle simultaneously with the new bobbin. It will be noted that the magazine or battery is placed on the loom with the butts of the bobbins away from the cloth. This, it is pointed out, enables the goose-neck cutter or shuttle feeler to sever the filling from the outgoing bobbin (and plug) at the point of the shuttle, four inches from the plug, insuring that this end of the filling will be carried away into the bobbin can, clear of the shuttle and clear of the incoming bobbin and plug.

A polished bar passes over the box-back just above the shuttle to guide the end of filling from the thread holder into the fell of the cloth which puts it into the temple cutter that cuts the thread at the second pick after the transfer. The filling is paid out of the shuttle through the tension plug over the top of the shuttle. With this arrangement, it is explained, the filling is not pinched between the shuttle and box-front; and sufficient room is left between the race plate and filling for the shuttle feeler-cutter to grasp the filling readily.

In the setting of a bobbin-changing loom, the inventor of the new device explains, it is customary to have the shuttle boxed in such a manner as to have the rings of the incoming bobbin interlock with the rings of the outgoing bobbin, with the incoming bobbin one ring nearer the end of the shuttle opposite the eye; so that, if the shuttle is driven too far into the box, the butt of the incoming bobbin strikes upon the inclined surface of the grip strap and pulls the shuttle into the proper position. If the shuttle is not driven far enough into the box, the bobbin engages in the grip with fewer rings.

In the new arrangement, it is pointed out, this condition is seldom if ever experienced, because the inclined surfaces of the straps correct the position of the shuttle whether the shuttle is boxed too much or too little. The bobbin corrects the position of the shuttle when not far enough into the box; and the plug corrects it when the shuttle is too far in.

The shuttle, being longer to provide for grips, is also evenly balanced on account of having the plug and grip in one end and the bobbin and grip in the other.

Should the bobbin unwind faster than the filling is laid into the fabric, the tension between the shuttle and fabric remains unchanged, it is pointed out; should a partial snarl occur inside the shuttle as a result of too rapid unwinding of the bobbin, it is drawn out by the even pace of the shuttle without affecting the tension.

A novel arrangement is provided for the bobbin can. A small compartment having a sole-leather door catches the plugs as they are expelled. It is stated that these plugs can be threaded to the bobbins at the rate of 15 or 20 per minute with very little practice. Individual plugs which for any reason are not performing up to par may be removed without stopping the loom, it is pointed out.

The kind of wind on the bobbin, the amount of twist, etc., do not affect the operation of the new device, it is stated. Slub, novelty and seed yarns are readily woven, as are Shantung, pongee and two-end fillings, since the end cannot come out of the plug unless the thread is broken. Knots pass through the plug smoothly, it is explained.

Although tests to date have been carried out only on rayons and fine worsted, the invention is equally applicable to cotton and silk.

Booklet on Rust-Tox

The Skybryte Company, 1919 E. 19th Street, Cleveland, Ohio, have recently issued a folder descriptive of Rust-Tox, one of their products designed for use as a coating on metal surfaces which penetrates into the pores of the surface and extracts the moisture content of the rust. This, it is explained, turns the rust into chemically inert iron oxide and puts it to work as a protective pigment.

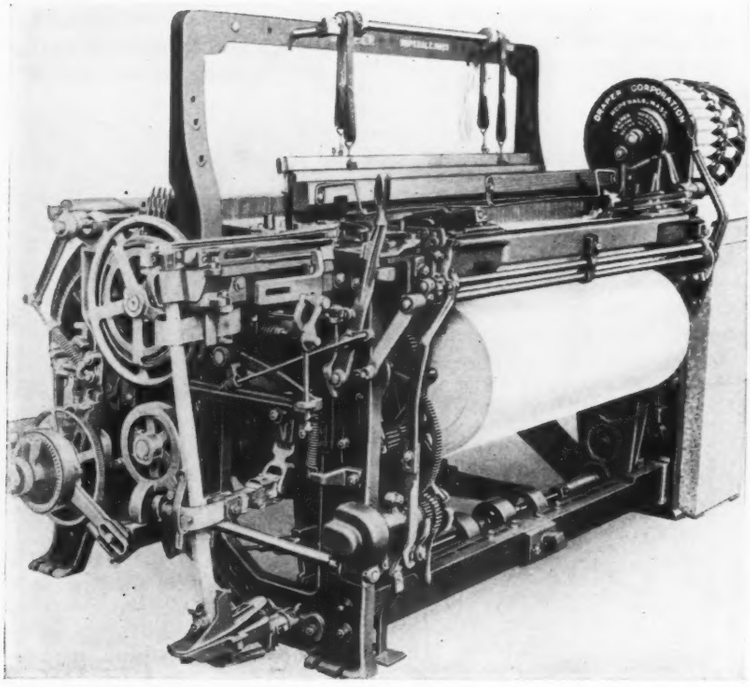
General Transmission Catalog

The Medart Company, Potomac & De Kalb Streets, St. Louis, Mo., manufacturers of power transmission machinery, have just issued their new general transmission catalog No. 56-T, which supersedes their former catalog No. 43. Among the information added to the old catalog are included items on flexible pin couplings, flexible chain couplings, flange couplings, Tripart keyless couplings and forged steel universal couplings. The book describes in detail v-groove friction clutches, belt tighteners, short center automatic belt adjusters, bicycle type hoisting sheaves,

SKF *Ball Bearings*

MEET 150,000 "BANG-OFFS"

● SKF makes practically *all types of anti-friction bearings.* When SKF recommends a particular type of bearing, therefore, you may depend upon it; its recommendations are *unbiased!*



SKF-EQUIPPED BUILT BY DRAPER CORPORATION

150,000 "Bang-Offs" without any bearing trouble mean satisfaction to the manufacturer . . . and to the user . . . of looms! They prove SKF are built for terrific punishment. For shocks and strains of shuttle impact mean little to SKF Self-Aligning Ball Bearings.

The SKF Bearing has inherent alignment that automatically compensates for any misalignment caused by frame distortion! It's sealed against lubricant leakage and dirt . . . saves power, lubricant, maintenance . . . permits practically instant starting (one-third second or less)!

It's the original aligning ball bearing . . . and is widely used by textile manufacturers everywhere! Our new folder, "Bearing on Looms", describes how SKF can bring you larger profits! Write for your copy today!

SKF
BALL AND ROLLER BEARINGS 3437

SKF INDUSTRIES, INC., FRONT ST. & ERIE AVE., PHILA., PA.

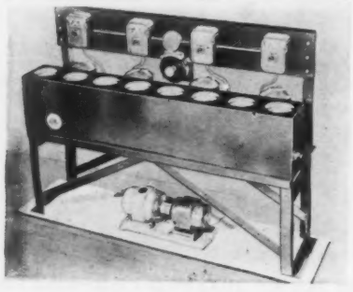
and has complete data on Manila rope drives. Full sections are devoted to Medart Timken-equipped bearings—straight sleeve and taper sleeve types, together with special unit mountings; Medart steel rim pulleys and special machinery applications.

Catalog on Loom Bearings

"Bearing on Looms" is the title of a new catalog recently prepared by SKF Industries, Incorporated, Front Street & Erie Avenue, Philadelphia, Pa., giving the records of several bang-off tests over a period of years. It describes the application of SKF double row self-aligning ball bearings for loom crankshafts, resulting in power, lubricant and maintenance savings and starting time of less than one-third second.

Single Package Extractor

A battery of single package extractors has been developed by the American Tool & Machine Company, 1415 Hyde Park Avenue, Boston, Mass., for drying yarns dyed on spools or packages. It is claimed that production can be accelerated, operating costs reduced, and the condition of the package after drying improved. The extraction unit consists of extractors for a single spool, mounted on a vertical axis driven by a motor through a v-belt. Two containers are driven by each motor, so that the batteries are built up in twos and multiples of two.



Battery of single package extractors.

A vertical spindle is mounted in ball bearings which, in turn, are mounted in a flexible seat. A spindle extension projects upward through the center of the basket container to centralize the spool. The baskets or revolving elements are made to suit the package diameter and have perforated sides. For small spools, extra removable inner baskets are supplied.

A novel method of dynamic breaking is used on these batteries of extractors, which, it is pointed out accelerate the cycle of operation and reduces maintenance and repair costs. The braking and generator set may be mounted either directly under the battery or on the wall.

The construction of these single package extractors permit the economical handling of any size batch. Operating cycles for handling the pairs of extractors increases production and increases the work turned out by an operator; a definite timing control is provided.

Rivetless Plate Tenter Clip

The Textile Finishing Machinery Co., Providence, R. I., has produced a new rivetless plate tenter clip, on which patent has been applied for, for bleaching, dyeing, printing and finishing plants. The manufacturers cite several special features of the new clip, including hardened stainless steel construction of the plate and method of securing it to the base or body of the clip. The design and means of installing this plate, it is pointed out, reduces to a minimum the possibility of oil or grease leaking through and striking upward onto the fabric. The controller has long bearing surface and light contact with the fabric of the patented quick drop or roller type. The gate is balanced for quick action and is fitted with stainless steel fixed or swivel insert to assure accurate gripping contact on the selvages. The body of the clip is of malleable iron, cadmium plated to prevent rusting and is fitted with a special hardened steel bushing and connecting rivet. The clips are available in different types, interchangeable on all makes of tenters of recent design.

New tenter clip . . .

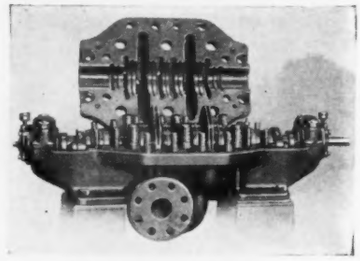
Industrial Thermometer Catalog

A new industrial thermometer catalog has just been issued by C. J. Tagliabue Mfg. Co., Park and Nostrand Avenues, Brooklyn, N. Y. The catalog, known as No. 1125, contains 24 pages of conveniently arranged listings of the company's complete line of industrial thermometers, miscellaneous metal and woodback thermometers, hygrometers, U gauges, mercurial vacuum gauges and mercurial barometers.

New Centrifugal Pumps

The new Type MM multi-stage pumps, developed by Allis-Chalmers Manufacturing Co., Milwaukee, Wis., for heads from 400 to 1,600 feet and capacities up to 400 gallons per minute, are designed along the general lines of the company's type M pump.

MM pumps are horizontal shaft, split casing, double suction, bronze fitted. The use of double suction runners, it is explained, equalizes end thrust and eliminates the use of internal balancing arrangements. Each stage of the casing has a spiral volute and between stages the liquid flows from one volute into an exceptionally long diffusion nozzle and then into a long sweep return bend to the inlet passages of the following stage. The manufacturers explain that this construction results in maximum practical regain of pressure between stages as the liquid is directed along smooth flow lines without sudden changes in velocity. The pressure on the stuffing boxes is kept to approximately the suction pressure. These new pumps are designed particularly for boiler feed, humidifier supply and other high head pumping service.



Type M centrifugal pump . . .

New Developments in Rubberizing

Self-Vulcanizing Rubber Co., Inc., 605 West Washington Blvd., Chicago, Ill., have prepared descriptive literature covering their new "Self-Vulc" liquid and plastic rubber. The manufacturers explain that this new product, which is in liquid and plastic form, is designed to meet the requirements for rubber covering, and has been developed for, among other uses, the following general purposes:

To protect inside and outside surfaces against abrasion, corrosion and acids; to restore surfaces of all kinds of material which have been worn away by abrasive action, acids and their fumes; to water-proof or corrosion-proof all kinds of containers and surfaces; to absorb shocks on surfaces subjected to impact; and to silence noises.

The application of this new liquid

IS YOUR MILL OBSOLETE?

MODERN EQUIPMENT must replace the obsolete, if textile mills are to operate at a profit. The mills that have made no improvements for years cannot expect to compete with those that are constantly modernizing their equipment and methods.

Summer—because of the usual lull in orders—is the opportune time for improvements which will be to your advantage when fall business begins. Prepare your plant now, so that you will be ready to capitalize your opportunities.

Your first equipment should include the bobbin cleaning machines. If the hand-cleaning method is employed, or obsolete machines are used, you will be amazed at how much you are losing.

This can be eliminated by installing the Type K Bobbin Stripper—for filling bobbins. It has a speed of from 100 to 120 bobbins a minute and nets worthwhile annual savings. For roving bobbins, no other machine or method will net the profits that the Termaco will.

Call or write us for an estimate of possible savings. It is free—you will be under no obligation—and you will undoubtedly find it well worth while.

The Terrell Machine Company, Inc.

1200 North Church Street CHARLOTTE, NORTH CAROLINA

MR. LUTHER PILLING, Danielson, Connecticut, *Representative for N. Y., N. J., Pa., New England States, and Canada*
GEO. THOMAS & CO., LTD., Manchester, England, *European Agents*

PHILADELPHIA
The Utmost in Felt
CLOTHS
ROLLER · CLEARER · SLASHER

THERE'S a big difference in felt cloths of various manufacture. Some do not have the correct cushion—some have a weak or loose nap that pulls out easily—some are too porous or not porous enough for textile use.

Many textile manufacturers who are particular about perfect and always uniform results from felt are standardizing on PHILADELPHIA Felt. They know they are getting the utmost in felt quality—felt that is made particularly for textile use—every inch rigidly inspected and always uniform.

Be sure of the highest quality and uniformity by specifying PHILADELPHIA for Felt Cloths, Stamping Blankets, Palmer Blankets, Sanforizing and Lapping Cloth for Printing, etc. Let our Southern Sales Manager, Mr. Clarence B. Seal, advise with you on your felt problems.

PHILADELPHIA FELT COMPANY

FRANKFORD, · PHILADELPHIA, PA.

rubber has recently been improved by the development of a new priming compound to make good results possible by the application of a single priming coat. The priming and liquid rubber can be applied like paint—brushed on, sprayed on, dipped on or poured on, it is explained, and the rubber vulcanizes itself when exposed to the air.

Booklet on Belt Dressing

E. F. Houghton & Company, 240 West Somerset Street, Philadelphia, Pa., have prepared and are distributing a new folder entitled "Houghton on Belt Preservatives" which contains helpful information on how, when and why to use belt preservatives or dressings, and also describes the Houghton types of products for various kinds of belts.

New Alemite Equipment

The new 100-pound high pressure air-operated barrel pump developed by Alemite Division, Stewart-Warner Corp., Chicago, Ill., converts any original 100-pound lubricant container into an efficient powergun for industrial and truck lubrication. Utilizing a nitralloy piston, a low pressure pump carries a continuous flow of lubricant from the container to a high pressure pump.

High pressure barrel pump

From there the lubricant is delivered at the rate of 18 ounces of regular lubricant per minute, or 6½ ounces of the extremely fibrous and heavy lubricants. A pressure, 33 times the air pressure used, is available to furnish a delivery sufficient to take care of several outlets at one time.

The manufacturers point out that the direct flow of lubricant from container to pump without exposure not only prevents contamination of the grease, but insures strict cleanliness.

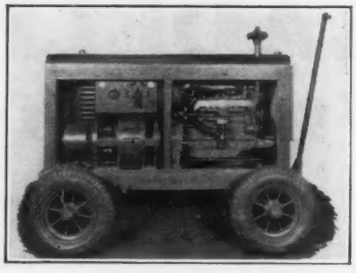
Removal of the barrel pump's top cover, held in place with one bolt, gives access to all the working parts of the double action air motor. The check valve may be cleaned without detaching the hose from the gun. The pump is provided with either a three- or four-wheeled truck for portability or a base for stationary installation.

Nickel Alloy Cast Irons

The International Nickel Company, Inc., 67 Wall Street, New York City, have prepared and are distributing a new data sheet covering the properties of nickel alloy cast irons and their special applications in petroleum production equipment. While the applications mentioned are specifically those in the petroleum industry, the material is of interest to others desiring to obtain a knowledge of the metallurgy of cast-iron without studying a technical presentation.

New Arc Welders

Universal Power Corporation, 1719 Clarkstone Road, Cleveland, Ohio, have recently announced the Universal Staid-Arc welders, which are available in gasoline engine-driven types, both portable and stationary, as well as in the electric motor generator type construction. The generator used utilizes the same stabilizing construction as that on the Universal Staid-Arc motor-generator sets for delivering a staid



Staid-Arc welder

smooth arc of high man hour welding efficiency. The generator output controls include a four point current adjustment switch with convenient hand grip type handle, plus a rheostatic voltage control which permits close welding heat settings totaling some six hundred steps. The control panel is of the ebony asbestos type mounting in addition to the control handles, a zero center Weston voltmeter indicating polarity, a zero center Weston ammeter, a polarity reversing switch and the welding output studs with heavy wing-nut terminals.

The engines are of the Chrysler industrial type of six cylinder vibration free construction equipped with either battery ignition and electric starting equipment or with magneto ignition and hand cranking. Large capacity non-corrosive gasoline tanks are standard equipment. The engines are equipped with air cleaners and efficient carburetion.

The Staid-Arc principle of arc stabilization, it is explained, causes the welding generator to deliver a smooth and steady arc. A high efficiency of weld metal deposit, it is pointed out, eliminates arc interruptions hitherto taken for granted as a necessary evil.

Alligator Belt Cutter

An 8-inch flat belt cutting tool which employs a new principle in mechanical belt cutting has been announced by the Flexible Steel Lacing Company, 4607-31 Lexington Street, Chicago. The cut is made by pushing the knife through

New belt cutter

the belt from one edge to the other. The knife is mounted in a slot, as illustrated, and is operated easily by a direct arm push without mechanical leverage. The knife goes "like cutting cheese" through most belting, it is pointed out, but will cut even the thickest and toughest belts up to 8 inches in width with surprisingly little effort. The knife, of special alloy steel, will make several thousand cuts and is easily replaceable.

The belt is held immovable by an equalizing clamp or hold-down while the cut is being made; the clamp is also a guard for the blade. The clamp and frame are strongly built of aluminum alloy. The weight of the cutter is 4 pounds 3 ounces.

Blue IBC

Carbic Color & Chemical Co., Inc., 451-453 Washington Street, New York City, have announced a new number of the Indigosol group, Indigosol Blue IBC, which, it is pointed out, produces bright shades of blue of excellent fastness properties, superior to the older Indigosol Blue.

The new product is particularly recommended by the manufacturers for padding or dyeing plain shades on cotton or rayon where a high degree of fastness is required; it is stated that level results are obtained on both fibers, and that in printing, clear shades of blue are obtained of superior fastness.

TIMELY NEWS ITEMS WITH A TEXTILE SLANT

Hygrolit Moves

Hygrolit, Incorporated, recently announced that they have moved both offices and factory to 681 Schuyler Avenue, Kearny, N. J. The move was effective on June 1st.

New Representative

Robert G. Barr has recently opened an office at 1110 Johnston Building, Charlotte, N. C., and is representing several dyestuff and chemical concerns.

Wright Moves

Wright Company, Atlanta, Ga., manufacturers of soft drink and sandwich carts for mills and other products have moved and are now located permanently at 101 Cone St., N. W., Atlanta, Ga.

TAG Appoints Wacker

C. J. Tagliabue Mfg. Co., Park and Nostrand Avenues, Brooklyn, N. Y., have announced the appointment of E. D. Wacker as assistant general sales manager. Mr. Wacker has been with the company for 11 years, part of the time as manager of the Pittsburgh territory and more recently as division sales manager in charge of Snapon controller sales for domestic refrigerators. The Snapon controller division is now in charge of R. A. Skinner.

Changes in Territories for Terrell Salesmen

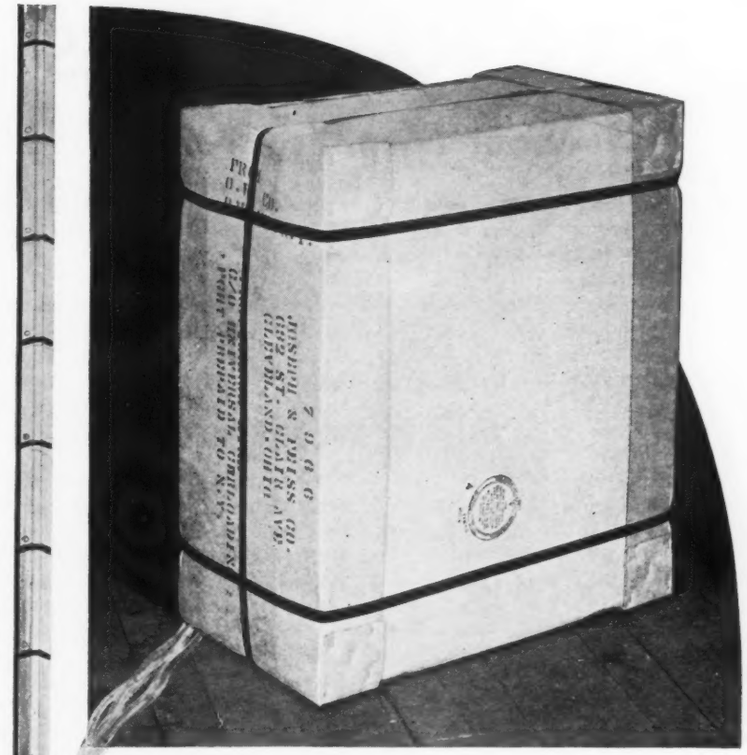
Effective August 1st, The Terrell Machine Company of Charlotte, N. C., has revised the territories of its salesmen. J. J. Wilson, Jr., who has been located in Greenville, S. C., has been transferred to Charlotte, N. C., from which point he will cover Virginia and Eastern North and South Carolina.

W. S. Terrell, who has been located in Atlanta, Ga., has been transferred to Greenville, S. C., and will cover Western North and South Carolina, Georgia, Alabama and Eastern Tennessee.

A. C. Kimbirl, who is located in Charlotte, N. C., is traveling the combined territories, and, in addition to general sales work, is in charge of supervision of installations and all service work.

Murphey Represents Universal

W. S. Murphey, P. O. Box 485, Charlotte, N. C., has been appointed representative in North and South Carolina for the Universal Power Corporation, manufacturers of arc welding equipment, accessories and electrodes, 1718 Clarkstone Road, Cleveland, Ohio.



★THIS HEAVY TEXTILE PACKAGE WILL ARRIVE AT ITS DESTINATION *Safely!*

Safety is the prime requisite of any textile shipping box manufactured by The Hinde & Dauch Paper Co. That is why the package pictured here gives complete protection to its heavy contents. Tough, durable corrugated fibre board protects the products against the rough handling of transportation. Have you ever used H & D boxes? If not, you're missing something. The Hinde & Dauch Paper Co., 454 Decatur St., Sandusky, Ohio.

HINDE & DAUCH

★ *Corrugated Fibre Boxes*

PLANTS IN PRINCIPAL CITIES

PERSONAL NOTES
about Men You Know

J. CANTEY ALEXANDER has been promoted to assistant manager of the southern mill starch division of the Corn Products Sales Company. Mr. Alexander has been associated with the company for the past 12 years. In his new position, in addition to contacting the South Carolina trade as in the past, he will counsel and help the company's salesmen throughout the entire territory, which comprises Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Florida and Texas.

Mr. Alexander

J. W. HAMES has resigned as superintendent of the Tifton Cotton Mills, Tifton, Ga., to become superintendent of the plant of the Avondale Mills, at Stevenson, Ala.

C. L. JOLLEY, assistant superintendent, has been promoted to superintendent of the Riverdale Mills, Enoree, S. C., succeeding J. C. MONTJOY, who has become superintendent of the Arkwright Mills, Spartanburg, S. C., succeeding MARSHALL C. STONE, who, as announced last month, is now plant manager and superintendent of the Pacolet Mfg. Co., No. 4, New Holland, Ga.

D. C. ANDERSON has become overseer of the spinning and spooling departments of the Bibb Manufacturing Company, Osprey Mills, Porterdale, Ga.

STUART H. SHERMAN has become general manager of the John Watt's Sons Co., Somerset Mills, Inc., Roxboro, N. C. C. M. MICHIE was recently promoted to superintendent. This plant manufactures terry towels. Mr. Sherman has been connected with John F. Street & Co. in Philadelphia; he was previously with a group of yarn mills in Lenoir, N. C.

PROFESSOR W. E. SHINN has resigned his position at Clemson College to return to the textile school of North Carolina State College, of which he is a graduate, and where he previously was instructor in knitting and designing.

D. O. BRYANT has resigned as superintendent of the Arnall Mills, Sargent, Ga., and has been succeeded by R. T. SMITH, formerly superintendent of Mills No. 1 and No. 2, American Cotton Mills, Bessemer City, N. C.

JAMES W. BRADBURY, manufacturing superintendent of the Kendall Mill, New Bedford, Mass., resigned recently. He took active part in revamping the Holmes mill in New Bedford to manufacture Kendall products. Before going with the Kendall Company, Mr. Bradbury lived in Danville, Va., and later in Greensboro, N. C., where he was connected with the Textile Development Company, textile consultants. During his 9 years as textile consultant, Mr. Bradbury surveyed mills in northern and southern states and foreign countries, and made many mill acquaintances. His plans for the future are indefinite.

JAMES L. BEARD has become superintendent of weaving at the Riverside Division of Riverside & Dan River Cotton Mills, Danville, Va. He was formerly connected with the Cliffside Mills, Avondale, N. C.

W. W. MORRELL has succeeded the late J. W. ALLGOOD as superintendent of the Jalong Cotton Mills and Roxboro Cotton Mills, Roxboro, N. C. He has been connected with these plants for 28 years.

CHARLES PHILLIPS has become overseer of weaving at the Pomona Manufacturing Co., Greensboro, N. C. He was formerly connected with the Rhode Island Mills, Spray, N. C.

H. P. THOMAS has been promoted from overseer of spinning to general superintendent of the Villa Rica Mills, Villa Rica, Ga., succeeding W. H. GOFF, resigned.

BROWN MAHON has been elected secretary of the Dunean Mills, succeeding the late DAVID CARDWELL.

D. M. ADERHOLT has been made secretary-treasurer and general manager of the Henry River Mills, Henry River, N. C., succeeding his father, the late D. W. ADERHOLT. H. M. ADERHOLT has been made assistant manager.

E. D. ESTES, formerly superintendent of the Opp Cotton Mills and Micolas Cotton Mills, Opp, Ala., and previously with the Callaway Mills, LaGrange, Ga., has accepted a position in the weaving department of the Schoolfield Division of Riverside & Dan River Cotton Mills, Danville, Va.

H. FAY GAFFNEY, of Columbus, Ga., sales representative for Sonoco Products Company, was recently presented with a loving cup in commemoration of the celebration of 20 years of association by him with the Sonoco organization.

L. R. CHAMPION, for 14 years general overseer of carding at the Alexander Mills, Forest City, N. C., and for the last two years overseer at the Springs Cotton Mills, Fort Mill, S. C., is now overseer of carding at the Monarch Mills, Union, S. C.

Obituary

C. M. BAILEY, president of Lydia Mills, Clinton, S. C., passed away on July 5 at 58 years of age. He had been ill and inactive for more than a year. Mr. Bailey organized the Lydia Mills 33 years ago and had been president and treasurer since that time. He was a brother of WILLIAM J. BAILEY and JOSEPH A. BAILEY of Clinton. Mrs. Bailey and three daughters survive.

WILLIAM EDGEWORTH BEATTIE, of Greenville, S. C., died on July 8 at his home. He had been seriously ill for a few days. Mr. Beattie, the father of S. MARSHALL BEATTIE and WILLIAM H. BEATTIE, and MRS. ELIZABETH WILLIAMS, was one of the conspicuous figures in the development of the textile industry during the past 40 years. He was president of the Piedmont Mfg. Co., from 1905 to 1923, and had been also head of the Victor-Monaghan Company. He was president of the American Cotton Manufacturers Association in 1923. He was 76 years of age at the time of his death.

J. FLETCHER COMER, vice-president of the Avondale Mills, and active head of the Alexander City, Ala., plant of the company, was found shot to death in his home at Alexander City on July 8. He had been in ill health for a considerable period. He is survived by his widow, one son, two daughters, and his brothers, DONALD, BRAGG and HUGH COMER. He was 59 years of age.

Automatic Spooling
ELIMINATES the use of *Hand Knotters...*

In Order to Reduce Spooling Costs,

the rate at which operators handle bobbins must be increased. All other spooling and winding systems use hand knotters; therefore, the work required is essentially the same and little if any decrease in costs can be obtained.

THE *AUTOMATIC SPOOLER*

mechanically finds ends, ties weaver's knots, controls slack while tying, and starts the yarn package winding. This enables the operators to handle many more bobbins per minute and results in large reductions in spooling costs.

Automatic Spooling . . .
is EXCLUSIVELY *a part of*
The BARBER-COLMAN *System*
of Spooling and *Warping*

STEP BY STEP

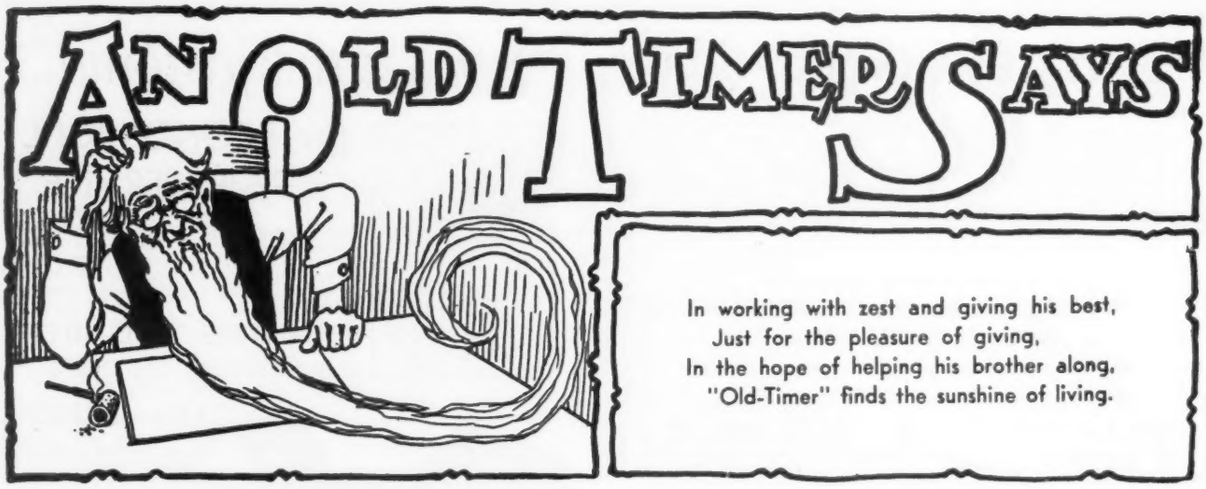
30 years ago SONOCO perfected the first machinery to automatically burnish the nose of a cone into a hard-surfaced tip that eliminated yarn hanging as it was unwound. A minor achievement perhaps, but a necessary first-step toward our present day perfected nose finishes. A necessary step toward the SONOCO Dunlap Nose, the lacquer-tipped cone, and the perfected knitting yarn package.

SONOCO Products are developed by Plan, through intensive technical research, and built up step by step through years of practical experience. It represents our Policy of Service to industries using our products. Most SONOCO achievements are the objectives reached by this Step by Step planned method, started by the founders of the business over thirty-six years ago.

SONOCO PRODUCTS COMPANY

BRANTFORD ONT. HARTSVILLE S. C. MYSTIC CONN.

DEPENDABLE SOURCE OF SUPPLY


AN OLD TIMER SAYS
In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brother along,
"Old-Timer" finds the sunshine of living.

More Random Thoughts to Make You Think!

How many good habits do you suppose you can form in a year, or how long do you suppose it will take you to form one good habit that you do not now possess? Suppose you set today's date down in your note-book and when you have formed the next good habit refer to this date to see how long it has been. That will at least be making a start toward one of the most profitable things you can do.

Suggestions: Do you eat too fast—change the bad habit to a good one.

Do you smoke too much?

Do you lose your temper?

Do you spend all you make?

Do you give the other fellow a little knock sometimes?

Do you hate your work? Is it a grind?

Do you wish Monday would not come? If so, that is worse than most bad habits and you had better change it darn quick or you may not have a job to go to on Monday. Then you will truly realize how much in love you should have been with your job.

Do you know when you feel bad? What a foolish question, of course you do. All right then, when you *know* you feel bad, watch your step. You are likely to speak short to someone and that may cost you money. Not right that day, but eventually. You may be sluggish with your work right at the time your boss has something important and expects you to be full of "pep". That one time may make a bad impression on the boss and prolong if not prevent your promotion.

When you see a dangerous place on the road, you guard against running into it. When you feel bad, that is dangerous, so guard yourself against letting other people know it. If you will go at your work in a cheerful mood when you feel bad—hard to do I'll admit, but you can do it—you will soon forget you are feeling bad and the day will be profitable instead of a liability.

The fellow who does his work better than his co-workers do theirs, doesn't generally have to hunt a job; the job hunts him.

DID you ever know of a firm, a business of any kind that did not take stock at least once a year—at that time they usually try to get rid of worthless stock—charge off bad debts, etc., etc.

How about you? You are a business. You are in the business of making a living for yourself and family; you are in the business of striving to make a success. Why not try taking stock of *yourself?*

Write it down on paper just like the public accountant does, have a debit side and a credit side. He puts bad debts on the debit side. You should put bad "traits" on your debit side.

Write down the things that you know you should get rid of. How about your temper; have you any "bad" that you should first throw away? You can't sell it, you know, because no one would want it. Then why should you keep it if it is hurting your business of making a living?

Try taking stock, brother, you'll be surprised at the improvement you can make in your business.

* * *

INFORMATION obtained from the experience of others, plus your own imagination, will bring success if you have the backbone to stick to it until you prove that imagination into a reality.

* * *

"FAMILIARITY breeds contempt" is a very true saying; therefore, the man who has the knack of being friendly with employees and can still hold their respect—well, he is a genius and will go far up the ladder.

* * *

SELFISHNESS is such an expensive thing for any person to have that if they had to buy it no one would have any—

Then why—

If you are smart enough to finish the sentence why aren't you smart enough to throw away your expensive selfishness?

* * *

IT is doing more than you are getting paid for that raises more salaries than any one thing I know of.

Beating Competition

is just a matter of Bettering Your Product

A "good" product is not good enough in these days of strict specifications for textile goods. It must be better than the average, and to make it better NORTH Individualized Service can be mighty profitable to you, just as it has to many other mills.

NORTH Service means the sending of practical men to your mill to completely and thoroughly investigate your particular methods and systems of sizing, the making of laboratory tests on raw cotton, unsized and sized warp yarn, and on cloth, giving moisture content, dry size and other conditions. Suggestions are then made by these practical mill men, aided by our expert textile chemists, to assist you in bettering your product and beating competition.

SLASHING **WEAVEWELL** *PRODUCTS* ● *FINISHING* **FINISHRITE** *PRODUCTS*

● *EFFICIENT* **TY-RITE** *TYING-IN* ●

The performance of NORTH products is the result of a quarter century experience. Convincing proof of their efficiency is the steady increase in their use throughout the South.

Ask for full details of NORTH Service and NORTH products.

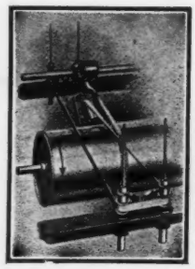
FRANK G.

NORTH

INCORPORATED

P. O. Box 844, Atlanta, Ga. Phone Main 3565 — *Manufacturing Chemists* — P. O. Box 92, Marietta, Ga. Phone 250

"Send it to Gastonia!"



for ECONOMICAL REPAIR SERVICE

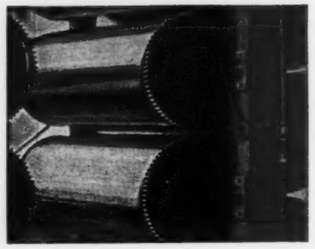
If you wish to save on the cost of new parts, and time and delay in shipment, have your equipment repaired or rebuilt in an up-to-date equipped plant by experienced textile experts—just "Send it to Gastonia."

SPINNING CYLINDERS

We are fully equipped to make new spinning cylinders or repair your old ones, making them as good as new, at a great saving to you.

CARD SCREENS

The rebuilding of card screens is one of our specialties. We have a complete stock of parts for all makes of card screens, as well as picker screens.



DRYING CANS

Just send your cans to Gastonia and you will receive them back in perfect condition quicker and at a saving.

You take no chances on Gastonia Service. Every job is guaranteed and quick service is assured. Write for full information today.

GASTONIA TEXTILE SHEET METAL WORKS INC.

222 E. LONG STREET

GASTONIA, N. C.

CONVEYOR SYSTEMS — GENERAL SHEET METAL WORK

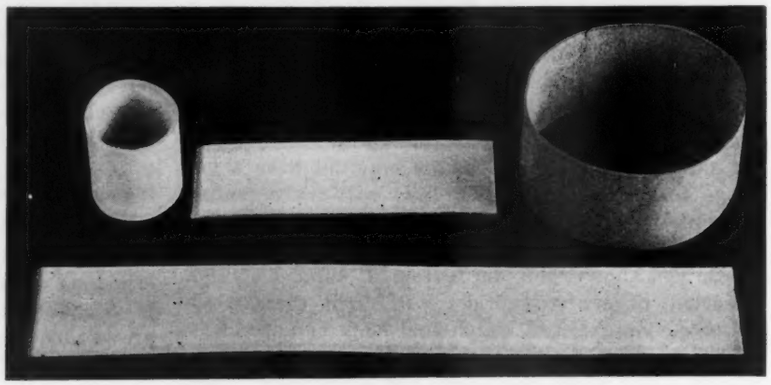
TEXTILE APRON CO.

905 SOUTH MAIN STREET,

EAST POINT, GEORGIA

●

WE are equipped to furnish long draft aprons for all purposes. Workmanship and materials guaranteed. Send us samples of your aprons and we shall be pleased to quote you prices.



CLINTON STARCHES

FOR ALL TEXTILE PURPOSES

Manufactured by

CLINTON COMPANY

CLINTON, IOWA

QUALITY SERVICE

HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all Varieties of Mill Subjects

A Tribute to Traveling Salesmen

A southern mill superintendent sends us this voluntary contribution as a sincere expression of his feelings toward the salesmen who call on the mills . .

EDITOR COTTON:

About 15 years ago I was promoted to the superintendency of a mill. At that time, in fact up until about three years ago, the superintendent at this plant did all of the buying and of course he met all of the traveling salesmen. About three years ago, some changes were made, and among them was the appointment of a purchasing agent who now does the buying for a group of mills. Along with this change, I took on new duties. For these reasons, I do not see as many of the "Weary Willies" as I used to. Of course I often run into some of the boys when they are paying their regular calls at the mills with which I am connected. But, as I see myself gradually slipping away from direct contact with these men, I feel like I want to say something in regard to my long experience and association with the boys who are trying to make an honest living by going from mill to mill and calling on us crazy superintendents.

I have never been a traveling salesman, but I know that it must be very hard work, for the following reasons: A traveling salesman spends a large part of his time in an automobile; this within itself must be nerve-wracking. He is away from his home and family most of the time. He has to put up with all sorts of poorly prepared meals, and close, stuffy hotel rooms. Last, but not least, he has to meet all sorts and types of men—men with different personalities, different moods, and different attitudes toward salesmen; men with the big head, the medium head, the little head, and sometimes no head at all; men who are indifferent to the salesman's time, who will keep the poor fellow waiting an unlimited length of time, who do not consider that the salesman's time is worth something, too. These men pretend they are busy and have no time "to waste" with a salesman; they never once think, apparently, that the goods they are making are sold in the very same way that mill supplies and machinery are sold, and that the sale of their own goods depends largely on the success of personal interviews with prospective customers. My opinion is that a superintendent who thinks he is so busy that he does not have time to take up with salesmen is really not running the job, but the job is giving that individual the devil of a foot race. And a good many of this type are eventually run clean out of a job, and then they are friendly enough with some of the same men to whom they have been rude and insulting. I have known this very thing to happen in several instances.

Now, a word about the salesman—the man himself! All the traveling salesmen that I have been fortunate enough to meet are very nice, clever, genteel fellows. They are friendly, congenial and courteous. They have to be—or get off the road. Once in a while, of course, you meet the high-powered salesman who has got the idea somehow that he is smart. This type you will recognize within two minutes at your first meeting, because he will start right out by trying to convince you that your plant ought to be in the hands of the receiver because you have not been using his products. If you will have patience and listen for a while, you will begin to wonder yourself, but just give him time to say his little piece that he has learned from memory, and he will talk himself right out of a sale with the average superintendent. Of course, all superintendents have their peculiarities. I once heard of a superintendent who would not buy from a man who wore a derby hat; and I myself am peculiar to the extent that I do not like to have a salesman try to force his goods upon me. Of course this seldom ever happens.

Traveling salesmen, without realizing it themselves, have helped me to run my job. I seldom meet a traveling salesman from whom I do not learn something before he leaves. There has been many a time when a salesman has told me some little thing that he has heard other mill men say which I could conveniently apply in my own plant. I very often go out to supper (yes, I still say breakfast, dinner and supper) with traveling salesmen, not for the sake of the food I get, but for two specific reasons—first, because I personally like them, and, second, because I invariably learn something from them that is worth considerable to me in my business.

I am very glad to say that I have made a personal friend out of nearly every salesman I have met, and I value these friendships very highly. I appreciate their friendship, their good fellowship, their hail-fellow-well-met attitude. They are a darn fine bunch of men and there are a great number of them that I am sure would delight in granting me any favor within reason that I might ask. Should the time ever come that I have to ask favors of anyone, I can think of no one that I would go to any quicker than I would go to my friends—the men on the road who have been calling on me all of these years and selling me the things that I need in my business.

CONTRIBUTOR NO. 6410

Preventing "Ropy" and "Sloughed Off" Filling on Wide Sheetings

Also expresses opinion as to the advisability of using pick-out hands on wide sheeting . . . .

EDITOR COTTON:

In reply to "CONTRIBUTOR NO. 6359" on page 83 of the March issue of COTTON, I will say that there are several causes for "ropy filling" or "slough-off". The most frequent cause for this trouble is improperly built bobbins. The traverse of the ring rail in the spinning frame might have been too short or too slow. The traveler might have been too light which will make the yarn on the bobbin too soft. Any of these faults will give the filling a tendency to slough off during the weaving. The ring rail should go up fast and down slow. In the weaving, a bobbin made this way will give a greater resistance to sloughing off. The sloughing off usually occurs when the filling runs down on the traverse, but if the ring rail goes down fast it will lay the yarn at a steeper traverse which will resist sloughing off much more than a declining traverse. I presume that "CONTRIBUTOR NO. 6359" makes his bobbins directly on the spinning frame for with quilled filling we seldom have this trouble as we can make the bobbins under greater tension on the filling thread.

Another thing that will cause the filling to slough off is if the filling has been wetted, or conditioned, so far ahead of the using of it that the filling has dried on the bobbin. This makes the filling very loose on the bobbin and always causes more or less trouble with sloughing off. Personally, I prefer male bobbins rather than female bobbins, for the former seem to hold the yarn more firmly on the barrel.

In a wide sheeting loom the speed of the shuttle is very high and we must see that we do not have any excessive power on the pick as this will increase the tendency of the filling to slough off. The retardation of the shuttle must be as gradual and gentle as possible. We must make sure that the binders under proper pressure start the retardation of the shuttle as soon as it enters the box and that the retardation is finished by the picker stick check. This setting of the loom will, of course, place additional strain on the picking motion on the next pick, but if we have trouble with filling sloughing off we must sacrifice an easy box leave of the shuttle, if we do not use a binder releasing motion on the pick.

Without seeing the loom in operation, or at least one of the filling bobbins, I can not state exactly just what causes the sloughing off of the filling, but "CONTRIBUTOR NO. 6359" himself can eliminate those causes which do not apply in his case.

In regard to "CONTRIBUTOR NO. 6359'S" trouble with bad places in the cloth, which he attributes to blowing off the loom, it is impossible for me to state the cause of this trouble since "CONTRIBUTOR NO. 6359" did not describe the nature of the bad places. However, we know that blowing off the loom with compressed air will cause bad places in the cloth if we do not take due care in this operation. In blowing off a loom with warp in, we start on the arch, holding the air nozzle at such a distance away from the arch that it will only blow off the loose lint and not the sticky lint that has been saturated with oil. Next we start on the harnesses and the drop wires, directing the air stream downward. With one apron between the warp and the warp stop motion and another between the cloth roll and the lay, we can avoid blowing dirty and oily lint on the warp and cloth. Next we blow off the loom frames, directing the air stream outward, or away from the loom. To protect the material in adjacent looms it is a good practice to use a standing cloth screen that can be folded up and transported to wherever needed. This screen will protect adjacent looms from flying, dirty and oily lint. Before we start up the loom after a blowing off we see to it that no loose or oily lint is left on the warp or cloth. This we must carefully remove before starting up the loom.

We should not attempt to give the loom a thorough blowing off when we have warp in the loom. It is much better to wait with this until the warp is out and in the meantime, blow off the loose lint only. Another, safer way to remove the loose lint, is to use a portable vacuum cleaner while the warp is in the loom and compressed air to give it a thorough cleaning when the warp is out.

In reply to "CONTRIBUTOR NO 6359'S" question: "Do you think it will pay to have pick-out hands for wide sheeting looms?", would say that in my opinion, it does not unless the pick-outs are so numerous that they will seriously hamper the weaver's production. The reason for my objection to using a pick-out hand on wide sheeting looms is that the nature of this fabric is such that unless the picking-out has been done with the utmost care, it is very difficult to start up the loom again without making a bad start-up. It is my opinion that a pick-out on this class of work should be done under the skill of the weaver who is responsible for the starting up of the loom. Starting up a loom on wide sheeting after a pick-out is a job that requires great skill, but unless a pick-out is properly executed no skill of the weaver can start up the loom without making a bad starting up place. The few dollars we might save in wages by employing a cheaper pick-out hand will probably be lost several times over by lower production and quality of the cloth. If the weaver is so overburdened that she can not take care of the pick-out without serious hampering I would reduce the number of looms rather than to employ a pick-out hand on this class of work. Of course, the question whether or not to employ a pick-out hand is individual for each mill, but a pretty good answer to this question can easily be had by making a time study of the actual mill condition in the mill in question.

I. M. (MASS).

WE invite our readers to make use of this department for the discussion of any and all problems arising in the mill or finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statement of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

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TWIST--by Fay H. Martin

THIS is the second of the current series by Mr. Martin, covering Draft, Twist, Lay and Tension. The first article, on Draft, appeared on page 79 of the July issue.

These articles by Mr. Martin, a recognized authority on the roving frame, explain these important elements of cotton manufacture in the clearest terms, so they may be understood by the novice; and incorporate facts and information out of a lifetime of experience that will be refreshing and valuable to the experienced man. The reader is urged to preserve his copies of each installment for permanent filing and reference.—The Editor.

TWIST—the dictionary defines it as follows:

"To unite or form by winding together; wind spirally; interlace; cause to turn from a direct line."

Twist in roving is a very important factor in the making of cotton yarn. The action of twisting on a roving frame comes directly after drafting.

Cotton fibers when delivered by the front roll are moving in a straight line, but it is necessary to twist them together before they can be wound upon a bobbin. When these fibers have been twisted they form a strand of cotton fibers that is called "roving".

On a cotton roving frame, the cotton fibers pass from the front roll to the flyer, and it is between these two points that the twist is put in. The front roll and the flyer are connected together by a train of gearing and it is the purpose of this article to show and explain how they are connected and the relation one bears to the other.

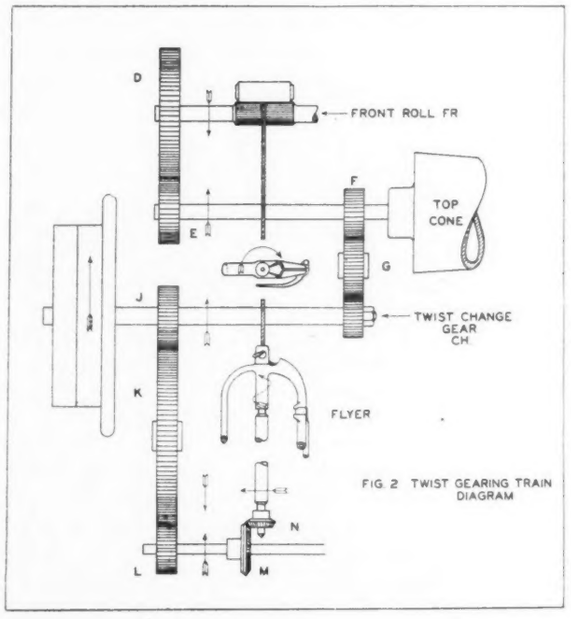

FIG. 2 TWIST GEARING TRAIN DIAGRAM

In Fig. 2, the complete train of gearing is shown. This may vary to some extent on different makes of roving frames, but the principle is the same on all.

The twist or turns per inch of roving is governed by the twist change gear.

We will now make a calculation, or "figure it out" in simple words, just how many turns per inch a certain twist change gear will make and also show how the constant number is obtained. In making the "set up", always start with the bevel gear that is on the spindle, then work back against the direction of the roving which is always going forward.

The symbol letters used in this article are taken from a Woonsocket Machine & Press Co., Inc. catalog, 1925 edition, the size of frame is a 7x3½-inch roving.

N—Bevel gear on spindle.
M—Bevel gear on spindle shaft.
L—Gear on spindle shaft in head end.
K—Intermediate gear in head end.

Note: (This is not used in the calculation as intermediates only carry tooth for tooth and do not change the speed of any gear that is meshed into it. This holds true on all intermediate gears.)

J—Main shaft gear in head end.
CH—Twist change gear.
G—Twist intermediate gear. (not used)
F—Top cone shaft gear. No. 1 Samson
E—Top cone shaft gear in head end.
D—Front roll gear in head end.
FR—Front roll.

The "set up" is as follows:

Starting with the symbol or letter N which will be placed in the left-hand column (see article on Draft, page 79, July COTTON)

$$\begin{aligned} N &= 21 \quad - \quad 43 = M \\ L &= 30 \quad - \quad 45 = J \\ CH &= 30 \quad - \quad 48 = F \\ E &= 75 \quad - \quad 128 = D \end{aligned}$$

Circumference of $1\frac{1}{8}$" FR = 3.534"

Now turn these columns of figures to the left (see Draft article) and draw a line between them. This will bring the right hand column above the line and the left hand column below the line.

$$\frac{43 \times 45 \times 48 \times 128}{21 \times 30 \times 30 \times 75 \times 3.534''}$$

These columns are now in a position for cancellation.

After cancellation the example will be as below:

$$\frac{43 \times 2 \times 128}{7 \times 5 \times 75 \times 1.767} = \frac{11008}{4638.375} = 2.37 \text{ turns of twist per inch.}$$

The drawing of a line between the top row of figures and the bottom row means that the top row is to be divided by the bottom row, but before dividing multiply ($\times$ is symbol for multiplying) the top row of figures together, then the bottom row together, then divide the top row product by the bottom row product. The answer is the turns of twist per inch. The *constant number* is obtained by doing the calculation in exactly the same way, as above used to obtain the turns of twist per inch, *except* that the change gear

"CH" is left out of the calculation. The set up would be:

$$\frac{43 \times 45 \times 48 \times 128}{21 \times 30 \times \mathbf{O} \times 75 \times 3.534}$$

This would cancel down to:

$$\frac{43 \times 4 \times 128}{7 \times 25 \times 1.767} = \frac{22016}{309.225} = 71.19 \text{ constant.}$$

$$71.19 \div 30 \text{ CH} = 2.37 \text{ turns per inch.}$$

$$71.19 \div 2.37 = 30 \text{ tooth change gear CH.}$$

Hence after the constant number has been obtained, the only thing to do is to divide the constant number by the change gear and the answer is turns of twist per inch or in reverse divide constant number by turns per inch wanted and the answer is number of teeth in change gear.

Twist change gears range from about 20 to 50 teeth on a 7x3½-inch frame, the smaller gear making the most turns per inch and the larger not so many, as follows: A 20-tooth change gear will make 3.55 turns while the 50-tooth will make 1.42 turns per inch in the roving; the percentage of change in turns per inch is greater from one tooth to another with a smaller gear than it is with a larger gear.

A 20-tooth gear will make 3.55 turns while a 21-tooth gear will make 3.39 turns, a difference of .16 (hundredths) of a turn or 5 per cent.

A 50-tooth gear makes 1.42 turns while a 49-tooth makes 1.45 turns, a difference of .03 (hundredths) or 2 per cent of a change.

Hence the larger the gear, the less the change in turns per inch from one tooth to another and this holds true in all change gears.

Oftentimes, on a roving frame, the range of twist change gears are not sufficient to make the required twist needed. In such a case the roving frame can

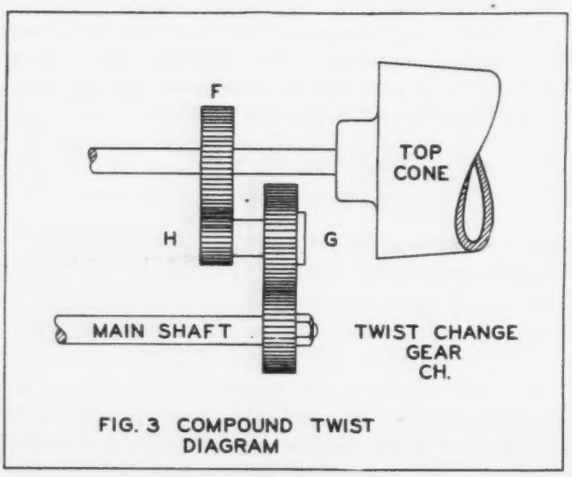

FIG. 3 COMPOUND TWIST DIAGRAM

be changed at the twist intermediate gear "G" by putting in its place a twist compound gear (see Fig. 3). (Consult the frame builder for details). This is usually, but not always, a 2 to 1 addition. In other words, the twist will be doubled after the change while using the same change gear. This calls for a different constant number.

The twist compound gear on a Woonsocket 7-inch frame has 28 and 48 teeth, not quite 2 to 1, and the new constant number will be 122.05. This number divided by 50 teeth would give 2.44 turns of twist in place of 1.42 turns. This compound twist gear is often used when running fine roving on a 7-inch frame as it enables the running of a larger twist change gear to obtain the same results as when running a very small change gear.

If one single tooth in a gear is changed at any point in the train or if the diameter of the front roll is changed, a new constant number must be calculated.

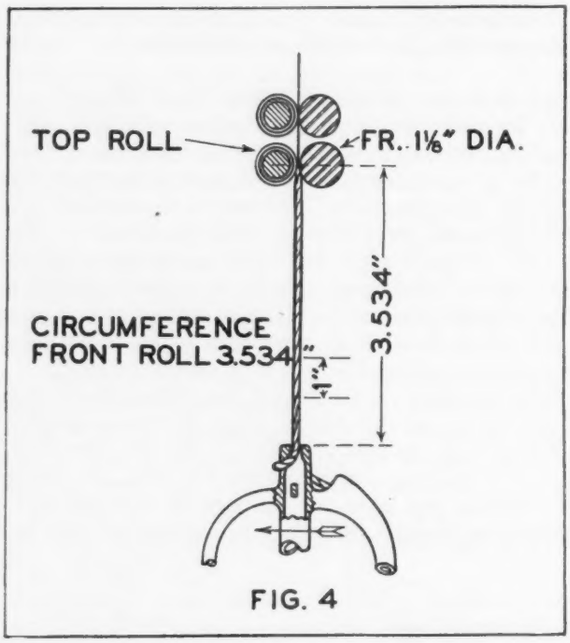

FIG. 4

It will be noted that the circumference (meaning the distance around the outside of a circle) of the front roll, FR, is used in the calculation of turns of twist per inch and in finding the constant number; the reason for this will now be explained:

Before any twisting can be done, the front roll must deliver a strand of cotton fibers for twisting. With *one* revolution of a 1⅛-inch front roll, 3.534 inches of cotton have been delivered. Now in order for one turn of twist per inch to be put into this strand, the flyer must revolve 3.534 times; to put in 2.37 turns of twist per inch, the flyer must revolve $2.37 \times 3.534 = 8.375$ or 8⅜ revolutions; for four turns of twist per inch, multiply four by 3.534 which equals 14.136 revolutions or, in other words, multiply the circumference of the front roll by the number of turns of twist and the answer is the number of revolutions of the flyer to *one* revolution of the front roll. Thus a direct relation is established between the front roll and the flyer by the train of gearing that connects them. This relation starts with the main driving pulley on the frame, it works down from the main shaft, through gears J, K, L, M to N, which is on the spindle, and up through the gears CH, G, F, E to D, which is on the front roll FR. The connecting link between the two ends of the train is the strand of roving which is between the front roll

and the flyer, hence it is very important to use the circumference of the front roll in twist calculations, for the cotton is being delivered at a constant speed and is received and passed through the flyer to the bobbin at the same constant speed. Thus the unit for the calculation is the *one* revolution of the front roll. (See Fig. 4).

(The first article in this series, published on page 79 of the July issue of COTTON, discussed Draft. Subsequent installments will cover Lay and Tension. Readers should preserve their copies of these articles.—The Editor.)

Wants More Information About Flat Grinding

EDITOR COTTON:

In the March issue of COTTON, on page 82, "WASH (R. I.)" in many words seems to pat himself on the back plenty, and also tries to impress everybody with the necessity of having an automatic flat grinding machine in every mill. True, this machine is a very valuable asset to any card room, but "WASH" fails again by not explaining precisely how the machine would prove useful in any carding department. Please take special note of this statement in paragraph 7 of his March article, "No mill man can deny that every practical man believes that every flat should do the same amount of work, because every flat is of equal importance in insuring efficient carding, and the only way in which this can be accomplished is to have all seatings perfect so that all flats which are brought into position on the flexible bend will have the same space between them and the cylinder."

To almost any novice the foregoing statement contains absolutely nothing original, but why align faulty or worn flat seatings with the work performed by the flat grinding machine? Can this machine correct worn seatings? Of course not, and "WASH" ought to know this, but it is certainly evident that he wishes to declare and impress upon us that the chief cause of high and low flats is worn flat seatings with the contention that some wear more and sooner than others. However, we will grant that this condition does exist—I of course assuring myself that it does not and is not the chief cause, but supposing "WASH" is correct and that in a certain set of flats a few seatings wear more than the rest. Naturally the wire on these particular flats will be closer to the cylinder wire, and according to "WASH'S" theory that all seatings do not wear equally, some of those flats, the ones with the worn seatings, I mean, will be closer than the others, maybe not even rubbing.

Now supposing again—and mind you, this can happen—you were going to set that particular set of flats, and by luck—and it would have to be very good luck—you had what you thought were the highest flats at the setting point on any make of card. What assurance has any grinder or carder that in between those setting points there rest two or three more flats which are slightly higher than the ones to which he is setting? None whatever, as you will agree.

This method of setting results in absolutely no setting at all eventually, for the simple reason that upon starting that card the carder might be greeted with an annoying hum which would result in a few faced flats if the particular point or points were not set up immediately. Therefore, the result would be any old setting. Such things do happen.

Now, what I would like to know is, if anyone can inform me, how I am going to pick out high flats for setting and mark them as "WASH" says grinders and carders have them marked?

By the way "WASH" treats this subject, surely the impression is conveyed to the reader that this condition of high and low flats is a universal occurrence and it is readily understood that as long as the grinders know which are the high flats and mark them and therefore set to those flats, everything will be O. K., because he states that setting to high flats is the only way to set a card. Elementary, very elementary.

Is a set of flats properly set even if you could set to all the high flats? The answer is, decidedly, no!

Still "WASH" states that he has proven that all high flats are marked, giving us to understand that in our own card rooms the same system exists. "WASH" ought to travel some more and find a few mills where, when high and low flats are detected, the only marking they receive is a mark for re-clothing or re-grinding. As for dabbling around a card looking for marked flats and trying to set them, that is nothing short of nonsense, and even if a mill were not in possession of a flat grinding machine, the trouble could be somewhat eliminated by regular grinding on the card by a method recently advocated by one of our friends in this department.

If "WASH" had dealt more with the benefits derived from the use of the flat grinding machine and how it could be used to grind the high flats, one would have given credit for his effort, but to read his statement gives me the impression that he does not fully understand the subject of card setting.

From previous remarks it appears that "WASH" ignores the fact that such things as elongated flat chains, faulty grinding motions, and irregular speed of grinding rolls, are common causes of high and low flats. His chief claim is that some of the seatings wear more than others. Does the flexible bend wear also, equally, for its full arc or does it wear in spots?

However, I know of one case in particular where faulty grinding motions and worn chains on forty cards in an old mill were the causes of high and low flats. Needless to say in this case neglect had prevailed for several years. The cards were of a good English make and had grinding motions similar to the Whitin type and upon checking some of these I noticed that on the slipper which was supposed to pick up each flat in succession as they came into position for grinding, several flats were missed, and therefore grinding was not accomplished. Naturally I proceeded to adjust the slipper in order to pick up these flats and if possible to synchronize the action of both sides. One card was enough for me, so I investigated the settings and discovered that these had been made when the machinery was stopped during the noon hour, and the cylinder was turned by hand, and if a rub occurred at any point, that certain point was raised sufficient to eliminate the sound. However, my job was to try to straighten out the condition of things, so I

promptly proceeded to dismantle the flats in order to inspect the chains, and believe it or not, I discovered that those chains had stretched 2½ inches as compared to a set of new chains for the same number of flats, 110 to be precise. There was the trouble in addition to worn slippers on the grinding motions.

By having that set of flats gauged and ground down to the lowest flats at the shop and replacing with new chains and properly synchronized grinding motions, the trouble was soon overcome, and needless to state, the whole set of 40 cards was overhauled in the same manner. You see, some of those flats had not been receiving the proper amount of grinding; hence, the wire was high and not the seatings, low or worn.

If "WASH" ignores the fact that flat chains wear to the extent I have mentioned or even sufficiently to cause trouble, let him dismantle a set of old ones and replace the flats with new chains, if he can, without altering the adjusting brackets to a lower position. That ought to convince him because he will find that the new chains will not fit unless the brackets are lowered very considerably and probably to the end of the slot.

In reference to "WASH'S" statement in his 9th paragraph, I fail to see what he is driving at, when he states, "The only way to prove that the closer the setting the weaker the yarn is to have every flat occupy the same seating on the rigid bend and to set to a 5/1000-gauge", Every flat must have the same seating, he says, but what about the same length of wire points. He appears to have the idea that the wire never varies. In regard to setting to a 5/1000-gauge, I doubt whether any carder would care to take such a chance. That reminds me of a man who set flats to a 7/1000, and only once, and in doing so broke 21 flats. He forgot certain important items relative to flat setting. For breaking strength, I am content to confine my attention to the back of the card—for instance, the feed plates to licker-in. D. R. (R. I.)

"Wash" Asks Another On the Fly Frame

EDITOR COTTON:

Why is it impossible to set the cone belt the same specified distance on all fly frames of the same make, size and gauge, and running the same hank roving?

1. Very few erectors of machinery or fixers use a plumb-line to get the definite perpendicular line that agrees with the cone outline at this point to suit the diameter of the empty bobbin.

2. Very few men use a level when the guide arm is connected to the rack.

3. The same can be said of the cone belt guide; the least deflection will cause more bearing on one side of the cone belt than on the other.

4. Any slight resistance offered to the cone belt, due to the train of gears from the bottom cone to the differential sleeve or the carriage not working as freely as on the next frame, will cause a slight deflection of the cone belt. No machine functions exactly the same, and the least difference in the factors discussed will throw the cone outline out of agreement at this point. WASH (R. I.)

A Carder Has a Dream

EDITOR COTTON:

The revolving top flat card is more interesting and supplies more food for thought, to my humble way of thinking, than we have ever given it credit for. I really get a kick, in lying awake at night, picturing the tiny cotton fibers, in an imaginary way, being carried on their journey around the card cylinder from point to point, and being tossed to and fro in an attenuating manner, and finally being thrown onto the doffer, where they are combed off, canned up, ready for future processing. Then I realize that it was only the master mind who conceived the idea of the carding engine, that understood the fundamentals of the mechanism. But who am I that I should try to write with even this much authority? I am bound to admit that this day dream is only my theory, so you may take it for what it is worth to your imagination.

Here is an imaginary moving picture of the tiny cotton fibers as they are carried through the card. With my eyes closed I can see the sheet of cotton as it is first being presented to the licker-in in a matted form. The licker-in teeth are playing through the cotton overhanging the nose of the feed plate, first carrying away the fibers in the cross section, and I can see that these fibers do not receive from the licker-in the same amount of combing action as those fibers which are held for a longer period of time by the feed roll, but it is these fibers that are combed out in a parallel position that I noticed falling to the floor, because the licker-in teeth failed to get a firm hold on them. Of course this is a waste for which I see at present no remedy.

Then again I see the licker-in losing its hold on some of the good fibers as the flying ends strike the mote knives as the licker-in conveyed the remaining fibers around to the cylinder. I see the sharp pointed cylinder wire grab the flying fibers and turn them with a flip and a zip, so that they are gone all the way around to the doffer, but I notice that these particular fibers as they are on their journey, when they come in contact with the first flat, the flying ends of the fibers are combed through this flat, but it seems that the other flats are loaded with fibers and trash so that these particular fibers seem to slip under their combing action without any further combing other than that of the first flat until they reach the doffer.

Then I see the sharp points of the doffer wire grab the flying end of the fibers and pull them away from the cylinder wire. I notice during this operation that the end of the fibers that had been so securely held by the cylinder wire point receive the combing as they are drawn through the cylinder wire points as the doffer plucks them away. Then I see again the sharp pointed flat wire catching some of the fibers as the cylinder conveys them on their journey, holding them for a short time and then releasing them under the action of the cylinder wire. Then it appears to me that these fibers are the ones which receive the greatest amount of combing action, and furthermore, as these fibers pass the setting point

between the doffer and cylinder and are carried around the cylinder for the second time, I notice that the flying ends of the fibers receive further combing action at this point as they are drawn through the points of the doffer wire. It is then that I realize why the cylinder is continually loading up with good fibers due to the fact that the wire on the doffer fillet does not perform its duty properly. This evil is somewhat eliminated by the use of a finer number of wire fillet on the doffer than that used for the cylinder. My idea of a perfect combination of doffer and cylinder fillet would be a doffer wire so designed with such an adequate carding efficiency as to grasp every fiber that came within its action from the cylinder; then it would be necessary to so design the cylinder fillet with a carding efficiency superior to that of the doffer, but with not as much adhering power on the fibers.

Anyone can readily see that this combination would be advantageous.

T. R. (N. C.)

Bone-Dry Yarn Sizing Versus Regular Method

EDITOR COTTON:

I had occasion some time ago to be in a slasher room that was close to the office of the overseer of ring spinning. While there I saw the spinning room section men come up one at a time; there were five of them and they each brought his box of yarn to be sized. It had rained hard the night before, and the weather was hot and therefore very muggy. These samples started to come up at 8:00 A. M. and at 10 A. M. all were there; that is, they laid outside of the overseer's office near the slashers. They were brought from a spinning room where the conditions were very humid, and left in a room that was very dry.

About 4:00 P. M., the overseer, according to his custom which never varied, started in to size. At noon it had stopped raining, and since it was a very hot day, everything outside was again dry. The office where the samples were to be sized, and the skeins broken, was very hot, as it was on the west side of the mill, and the sun was shining in very gloriously. The breaking machine was on the wall not 12 inches from the open window, as the overseer loved to look at the outside while earning his salary. By 4:45 P. M. his samples had all been broken, his yarn sized, and his reports made out.

With this method he governed the yarn size in the spinning room. All wrong, we say. Absolutely, but how many other overseers are as careless or as absent-minded? The answer is, hundreds of them. They will run the room at a certain per cent regain, keep the windows closed, and then go to work and size their yarn in an office which has a directly opposite condition to that of the room in which the yarn is spun.

This brings up the subject of keeping a room on a bone-dry size basis. By this method, a man would weigh his skeins as he always has done, but would do so as soon as they are collected. He would break as soon as sized, and then would tabulate his results. Then the samples would be put in a conditioning oven, thermostatically controlled to a temperature of 200 to 220 degrees F., and remain there for 45 minutes, and be weighed while in the oven. They would be weighed twice, 10 minutes between each weighing, to see that no difference in weight existed. This would be bone-dry yarn sizing. The difference between the original room weight and the bone-dry weight would be the per cent regain or correction figure. Both card room sizings and spinning sizings could be taken care of in this way, and it would not take hardly any more time; in fact, less additional time than it takes to wonder why it was heavy yesterday and light today. A form like this could be used:

SPINNING ROOM NO. A. M. OR P. M.
DRY BULB..... DATE.....
WET BULB.....

Room Condition			Bone Dry Condition			
Weight in Gr.	Yarn Size	Skein Break	Weight in Gr.	Dry Yarn Size	Corrected Yarn Size	Actual % Regain
45.5	21.98		42.7	23.42	21.99	6.56
46.5	21.51		42.7	23.42	21.99	8.90

Other data could be added to suit a particular mill.

Let us now take a skein that is to be bone-dried, and which in the room weighs 45.5 grains (120 yards) or 21.98s yarn. We put it in the oven, and bone-dry it, and find the bone-dry weight to be 42.7 grains, or 23.42s yarn. The per cent regain in this case is 6.56 per cent, secured as follows:

45.5 grains — 42.7 grains = 2.8 ÷ 42.7 = 6.557 or 6.56 per cent.

Our correction would be:

$$\frac{21.98 \times 100 + 6.56 \text{ (\% regain)}}{106.5} = 21.99\text{s corrected yarn size.}$$

The next weighing, taken the following day, would possibly be 46.5 grains or 21.51s yarn. Upon bone-drying we get 42.7 grains, or a regain of 8.90 per cent.

46.5 — 42.7 = 3.8 ÷ 42.7 = 8.90 per cent

The correction for this would be:

$$\frac{21.51 \times 100 + 8.90}{106.5} = 21.99\text{s corrected yarn size}$$

In both cases we have the same bone-dry weight, and we know our room weights are o. k., but were we to be based upon our room weights, the superintendent would throw a fit and the boss would go hay-wire and start changing all his gears. The foregoing illustration is only 2.14 per cent heavier, but if it were 100s filling, a 2.14 per cent variation would give us 97.86s, and how everyone would holler.

Personally, I am very much in favor of the bone-dry method and feel that if some more of our cloth mills would use it we could learn something from it.

The same correction factor can be used for rovings, as well as yarns, as follows:

$$\frac{\text{Yarn size or Roving size} \times 100 + \text{actual regain}}{106.5} = \text{corrected size}$$

Weight conditioned — weight bone-dried ÷ weight bone-dried = per cent regain.

CONTRIBUTOR NO. 6385.

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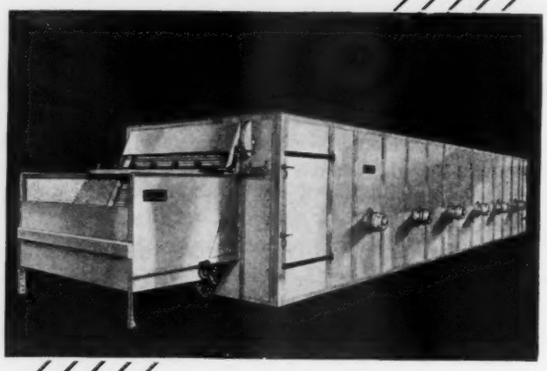

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Neppiness in Comber Waste

Disagrees with "Jock" as to the causes; prefers aspirator back; and submits a question which we hope "Jock" AND other comber men will answer.

EDITOR COTTON:

I have noticed that in some of his recent letters in the "HOW OTHER MEN MANAGE" Department, discussing combing, that "JOCK (MASS.)" has discussed neppiness in the waste and has given several reasons for this. The main reason, in his opinion, is the wear of the circular brushes.

I don't quite agree with him on this subject, for the following reasons.

The construction of the half-lap is one of these reasons. The brass matrices between the row of needles should be fitted as tightly as possible. If any space is left at these points the brushes have a tendency to pack the waste taken up by the needles into these open spaces, instead of carrying it to the doffer or aspirator. Any comber man can verify this statement by examining a half lap actually at work, especially on a comber taking out a high percentage of waste. That is one reason why, when you throw the feed out, you can see neppy waste toward the end of the waste. The brush isn't doing any work and it is probable that it will remove enough of the waste packed between the matrice and the needles to be noticeable at the back. The best remedy for this condition is closer co-operation between the re-needling firm and the plant having this work done.

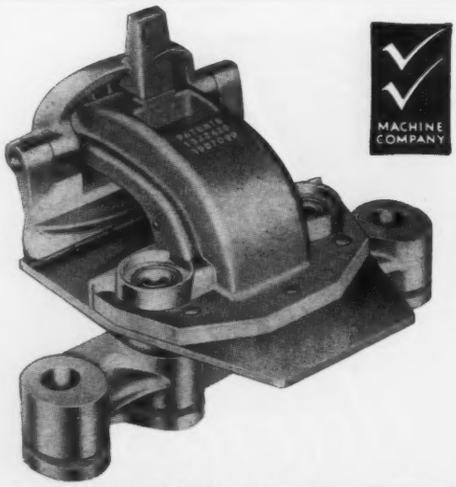
I am quite sure that if the man responsible for half-laps could see the job his work has to do and how it does it, along with some of its faults, he would cooperate with all of his ability to remedy the situation.

The reason neppy waste is more noticeable on the aspirator-equipped back is a simple one. The same pressure is being exerted on all of the brushes, regardless of the wear of any one brush, not only on the brushes but on the needle lap as well. Look at a brush taken from an aspirator-equipped back and you will find it as clean as a hound dog's tooth except at the bases.

The aspirator system is the work of a fan creating a vacuum which draws the waste from the brushes onto a revolving drum and from there it is deposited in a can, put there for that purpose. The doffer-equipped back is another story altogether; it is the custom in most plants where this equipment is used to have a man clean the brushes with a special make of rake at definite periods—positive proof that the doffer is limited in removing all the waste from the brush.

Take a look at a brush from this type of equipment and you will find the bristles, regardless of wear, just loaded with waste. What doesn't come out can't be seen. The doffer system is a drum fitted with filleting or licker-in covering and is set as close as possible to the brush without touching—therein lies its weakness.

Before putting new brushes on a comber, the brushes should be carefully measured as to diameter



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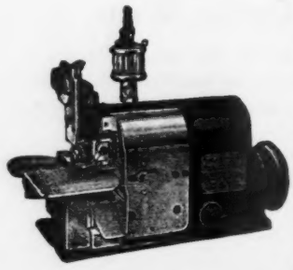

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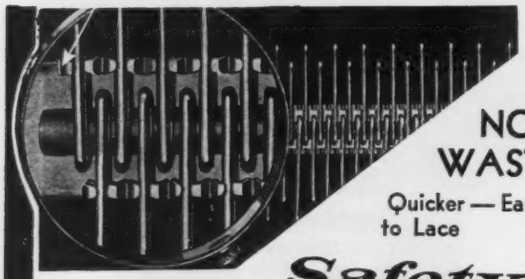

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and only those brushes of the same diameter should be used.

I would like very much for "JOCK" to answer the following question. I would be glad to have any other comber man discuss it:

What effect, if any, does the distance between the feed roller and the bottom detaching roller have in the control of waste percentage on the English type Nasmith comber?

N. C. (R. I.)

Proper Oiling for Looms to Prevent Oil On Friction Disc

A READER recently requested the opinion of Ivar Moberg on the following questions:

"I would like to have Mr. Moberg's experience as to keeping oil off of the cork friction disc on a Draper motor-driven loom. We have trouble with oil getting on the friction disc and slowing down the speed of the loom. We run these looms on two 8-hour shifts each day, and oil the motors once every two months. We oil the friction clutch once each shift."

Mr. Moberg's reply was as follows:

"In regard to the inquiry as to how to keep the oil off of the cork friction on a motor-driven Draper loom, I would say that the inquirer does have excessive oiling of the friction gear. The friction gear on a Draper loom has an oil reservoir and should not be oiled oftener than once every week, or once every two weeks would probably be sufficient. I think that once every shift, or twice daily, as he says he is doing, is altogether too much oiling.

"If there is too much oil in the reservoir, it will overflow when the motor is stopped, and the oil is bound to run down the friction gear, and it is transferred to the cork inserts when the friction is applied in starting the loom up. When the motor is running, the centrifugal force prevents the oil from overflowing. Therefore, if the friction gear is oiled while the motor is running, great care should be taken not to oil it excessively, as it is rather difficult to tell when there is sufficient oil in the reservoir when the motor is running. Using a light or medium semi-fluid lubricant will help greatly to overcome this trouble, but with proper oiling any good oil will do. To the contrary, with improper oiling, no good oil will do the job."

Experiences of other readers and their opinions on the above comments by Mr. Moberg, on this problem of preventing oil on loom friction discs, are invited.

The Pioneer, by Wm. P. Jacobs

(Continued from page 49.)

He used to point out that a crop of 10,000,000 bales at six cents per pound was worth only $300,000,000, whereas in its manufactured state, half of it could be easily worth several times that amount. In one of his speeches he said:

"In order to manufacture the entire cotton crop of the South into plain white and coarse colored goods, there would be required something like 30,000,000 spindles and 1,000,000 operatives. The pop-

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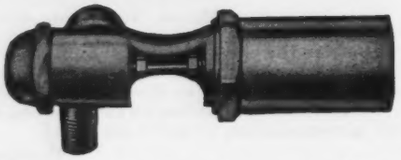

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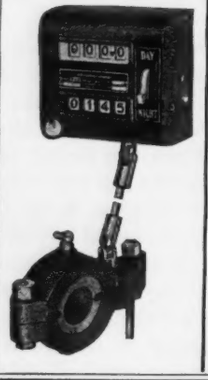

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ulation of the southern states may be ranked at 20,000,000. Does anybody doubt that out of this 20,000,000 there is enough idle time wasted, even by those who would be willing to work, to furnish 1,000,000 operatives in cotton factories? Go into ordinary cotton market towns where no cotton factories have as yet been built, and at any time from 7 a. m. to 10 p. m. count the people who are loafing, and the number found would more than make up the quota of people for its share of the workers necessary to manufacture the cotton crop."

Again he said:

"Practically all native people in the South are farmers. The manufacturing now being done by Southern people furnishes evidence of the faculty with which the Southern farmer extends his operations. Almost every Southern man who has gone into manufacturing is still a farmer and will continue to be so. The escape of the cotton farmer from approaching poverty is not in trying to curtail production and increase the price, but in devising means to keep the cheap cotton at home and in utilizing surplus time in turning it into cloth worth eighteen cents and upwards per pound."

D. A. Tompkins did not stop with preaching the gospel of industrial expansion. He did not stop with urging capital to build mills or confine himself to providing the new plants with machinery. He strove with all his might to create a new industrial spirit among his people. He used several agencies in this missionary task. He did all he could to promote liberal education, but the phase of the work that was dearest to his heart was the establishment of trade schools. For more than twenty years he served as a member of the Board of Trustees of the North Carolina College of Agriculture and Mechanic Arts, and he saw this institution work its way out of the handicap of poverty and discouragement into an agency of tremendous value to the South.

His work did not stop here. He saw that if the South was ever to develop textile skill that could compare favorably with that possessed by Lancashire, Lille, Chemnitz, Fall River or New Bedford, it would have to develop not only its own operatives but managerial ability equipped with technical skill and scientific knowledge of a world-old industry. It was with this end in view that he interested himself in the establishment of textile schools. One of the most notable of these is the Clemson Textile School affiliated with the Clemson College in South Carolina. Another result of his efforts was the provision of a textile department in the N. C. State College of Agriculture and Mechanic Arts. Encouraged by the work and enthusiasm of Mr. Tompkins, the States of Mississippi and Texas followed suit and established textile training schools.

No summary of the life of Mr. Tompkins would be complete without reference to his activities as a journalist and publicist. He was active in shaping the thought and sentiment of the South through the medium of the Charlotte Observer, which he developed into one of the most influential newspapers of the country. He was untiring in his work among his fellowmen. He was a fine speaker, although making no pretense to florid oratory. His manner in making an address bespoke clarity and force without flamboyant ornamentation. He had the social qualities of an industrial missionary, and one of his biographers sums up his splendid life in the following words:

"He built a New South—of mills and factories, of skilled labor and machinery, of diversified and intensified agriculture, of improved railways and highways, of savings banks and loan associations—a New South also of public schools, technical colleges and expanded universities, of independent journalism and independent thought—a New South of universal education and democracy."

(To be continued)

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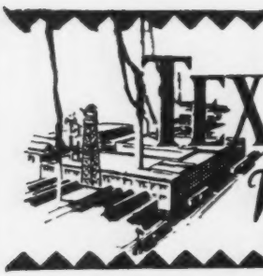

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The booklets or catalogs briefly mentioned below may be obtained by any readers of COTTON who will write to the Company issuing them or to COTTON, Grant Bldg., Atlanta, Ga.

172. Rust Proofing—Free booklet on rust-proofing for spindles, fly frames, rolls and other textile machine parts. Textile Spindle & Roll Corporation, Charlotte, N. C.

173. Over the Rough Spots—28 page booklet describing Stonhard resurfacer for repairing and resurfacing concrete, wood, brick and composition floor, making permanent repairs to badly worn surfaces. Stonhard Company, 401 North Broad St., Philadelphia, Pa.

174. Robertson Chain Link Fencing—giving details and specifications of Robertson chain link fencing, providing efficient and low cost protection for mill property. W. F. Robertson Steel & Iron Co., Elm & Second Sts., Cincinnati, Ohio.

175. Slashol — Pamphlet describing the many advantages and economy of Slashol for sizing, as compared with tallow. Wm. C. Robinson & Son Company, Dock and Caroline Street, Baltimore, Md.

176. Sonoco Products—A 60 page illustrated booklet giving descriptions, specifications and charts of the many Sonoco products, including: bobbins, cones, tubes cork cots, roving cans, spools, rolls, etc. Sonoco Products Co., Hartsville, S. C.

11. Whitinsville Rings—16 page illustrated booklet, describing ring manufacture, measurements, types, uses. How to determine flange sizes. By Whitinsville Spinning Ring Co., Whitinsville, Mass.

25. "Lupogum" and "Monopole Oil"—Two booklets on textile sizing and finishing products. Jacques Wolf & Company, Passaic, N. J.

29. Continuous Card Stripper—A 20 page booklet describing in detail continuous card strippers, their advantages, the power required to operate, etc. Saco-Lowell Shops, 147 Milk St., Boston Mass.

30. Lubrication of Textile Machinery—32 pages, illustrated. Data covering the economical lubrication of all textile machines. New York & New Jersey Lubricant Co., 292 Madison Ave., New York, N. Y.

38. Sleaziness in Full Fashioned Knitting—Illustrated survey with samples of fabric showing causes of sleaziness and methods to be employed in eliminating it.—By Textile Machine Works, Reading, Pa. (This company also issues parts catalog for Reading full fashioned machines with general information on subject of full fashioned knitting.)

64. Efficiency and Performance of SKF Roller Bearing Spindles—A twelve page booklet showing the advantages in power consumption, increased production, savings in lubrication, increased yarn breakage strength to be secured through roller bearing spindles. SKF Industries, Inc., Front St. and Erie Ave., Philadelphia, Pa.

65. Why Cooper Hewitt Light is Better Than Daylight—A 16 page booklet explaining in detail the importance of good lighting and the necessity of proper quality as well as proper quantity of light. General Elec. Vapor Lamp Co., Hoboken, N. J.

66. Dronsfield's Patent Portable Auto-Feed Needle Point Grinder No. 176—describing a new departure in card grinding—John Hetherington & Sons, Inc., 250 Devonshire St., Boston, Mass.

69. Monel Metal Equipment for the Textile Industry—A 50 page buyer's guide and catalog with more than 100 illustrations of various items of monel metal dyehouse equipment. International Nickel Company, Inc., 67 Wall St., New York, N. Y.

70. Fafnir Ball Bearings for One Process Pickers — outlining the advantages of ball bearings in guaranteeing smooth, accurate motion, particularly on eveners, as well as uninterrupted production, ease of operation and cleanliness of bearing units throughout the one-process pickers. Fafnir Bearing Company, New Britain, Conn.

72. The Merrow Butted Seam—A 16-page booklet defining and illustrating the Butted seam, describing its properties and outlining some of the advantages to be gained by its use in textile fabrics. The Merrow Machine Co., Hartford, Conn.

73. New Reeves Catalog No. 99—A treatise on efficiency speed control—including valuable information of special importance to textile industry men and production executives, outlining advanced methods of speed regulation. Reeves Pulley Company, Columbus, Indiana.

88. Dayton Cog Belt Catalog—A 32 page booklet full of vital information on power drives, plainly and simply assembled and arranged so that anyone can select the proper standard drive for any condition. It also provides data for the calculation of drives where acquired. The Dayton Rubber Mfg. Co., Dept. C-11, Dayton, Ohio.

92. Silicates of Soda—A review of the properties of silicates of soda and their various uses. Philadelphia Quartz Co., 121 S. Third St., Philadelphia, Pa.

95. Onyx Processing and Finishing Compound Catalog — A thirty-two page booklet listing and describing entire line of processing and finishing compounds, covering every process on all types of fabric. Onyx Oil & Chemical Co., 15 Exchange Place, Jersey City, N. J.

99. Bulletin 177, Temperature Controllers. 48 page booklet describing and illustrating the various types of controllers, charts, valves, etc., and their industrial uses. Foxboro Co., Foxboro, Mass.

102. White and Light Shade Cotton Fabrics Dyeing and Finishing. National Oil Products Co., Harrison, N. J.

103. Throwing Rayon Crepe. National Oil Products Co., Harrison, N. J.

106. Cotton System Warp Sizing on Multiple Cylinder Machines—a folder showing the advantages of this type of machine in making warps of acetate and other synthetic yarns and spun silk.—Charles B. Johnson, Paterson, N. J.

107. Complete Information on Alemite Lubrication. Showing how costs can be reduced through proper lubrication. Alemite Corp., 1828 Diversey Blvd., Chicago, Ill.

109. Some Properties of Starch and Dextrine—Explaining certain fundamental properties of starch and its derivatives and their action when heated and agitated. Stein, Hall & Co., Inc., 285 Madison Ave., New York City, N. Y.

110. 3-In-One for Industrial Uses—showing the many industrial uses and advantages of this oil. Three-In-One Oil Co., 70 Varick St., New York, N. Y.

115. How to Cut Cloth Room Costs with Automatic Picking Machines and Improved Inspecting Machines—Hermas Machine Company, Warburton Ave., Hawthorne, N. J.

116. Arcy—Telling in an interesting way the story of Arcy, which completely liquefies ordinary thick boiling pearl starch, and its many advantages. Drake Corporation, Norfolk, Virginia.

117. Anti-Friction Bearings as Applied to Spinning, Drawing and Twisting Frames—This bulletin shows with detailed drawings how a simplified design of roller bearing applications is made to replace the plain babbitt bearings and lists the advantages that are gained. It deals primarily with better continuous production and in consequence freedom from equipment care and repairs. Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.

119. The World's Finest Sewing Machines—a condensed catalog giving details of the various Willcox & Gibbs sewing machines. Willcox & Gibbs Sewing Machine Co., 658 Broadway, New York, N. Y.

120. Goodyear Mechanical Rubber Goods Catalog — 40 page catalog giving practical information and tables helpful in the selection of the proper belting, hose or packing to suit the requirements of the mill. Goodyear Tire & Rubber Co., Akron, Ohio.

122. Water Filters and Filtration Equipment—Containing complete description of the chemical processes involved in the coagulation and precipitation of foreign matter, the removal of iron, oil, manganese from water and the production of clean water suitable for the textile industry, together with tables of specifications for standard filters, and information showing the extra profits to be made by the mill through reduction in costs and process difficulties, through removal of undesirable impurities in water. Permutit Company, 330 W. 42nd Street, New York, N. Y.

132. Houghton On Sizing Products—Thirty-two pages of valuable information on sizing of cotton warps and yarns. Gives detailed information on how to conduct sizing tests and contains tables for recording results. It describes the requirements of different types of yarn and gives actual formulas for producing desired finish. E. F. Houghton & Co., 240 W. Somerset St., Philadelphia, Pa.

135. The Pick Method of Weaver Wage Payment—A manual of practical information describing methods to be followed in using Pick Counters; suggested forms, and tables included. Durant Manufacturing Co., 1932 No. Buffum St., Milwaukee, Wis.

139. Textile Detergents—Theory of the use of alkalis and control of pH.—This 32 page booklet explains in simplified manner for the benefit of the layman the chemical processes that take place in using textile detergents in the finishing of textile goods. It contains many useful tables and data. Detergent Products Corp., Peachtree Bldg., Atlanta, Ga.

140. Textile Machinery—Improvements in Design and Methods of Lubrication. A discussion of the problem of lubrication of textile equipment covering operating conditions and factors affecting and affected by lubrication. Card Room Operations, Twisting and Spinning Machines, Silk Throwing, Looms, Knitting Machines, etc., covered. Available in copy of June 1934 issue of "Lubrication." The Texas Company, 135 E. 42nd St., New York City.

141. V-Belt Engineering Data Book—Over 50 pages of pertinent engineering information including data on selecting a V-Belt drive design of special V-Belt drives, numerous standard tables, charts, and belt and sheave list prices. Manhattan Rubber Manufacturing Div. of Raybestos-Manhattan, Inc., Passaic, N. J.

147. Let's "CAN" The Oil Can—describing permanently sealed bearings for life, and for higher speeds and temperatures single seal ball bearings which have to be lubricated only from one to three years. New Departure Mfg. Co., Bristol, Conn.

148. Leather Packing—28 page booklet giving timely hints on the proper selection and installation of leather packings, the various types available, sizes and prices. Alexander Brothers, Inc., 406 N. Third St., Philadelphia, Pa.

150. Engineering Data Book on Mechanical Rubber Goods—21 pages of useful information and engineering data, designed to simplify the selection of belting, hose and other mechanical rubber goods for industrial service, including a review of belting requisites for a wide variety of uses as well as helpful tips on installation procedure. B. F Goodrich Co., Mechanical Division, Akron, Ohio.

152. Plant Checkup List—Crane Company, 836 South Michigan Ave., Chicago, Ill

153. Descriptive Folder of the New Low Cost Hermas Shear—Hermas Machine Co., Warburton Ave., Hawthorne, N. J

154. Johnson Bronze Bulletin No. 340—showing over 600 sizes Johnson general purpose bronze bushings. Johnson Bronze Co., New Castle, Pa.

156. Link-Belt Engineering Data Book No. 125—showing features and giving engineering data on Link-Belt silent chain drives. Link-Belt Co., 910 South Michigan Ave., Chicago, Ill.

157. Grading Rules and Complete Specifications for Laying and Finishing Maple Floors—Maple Flooring Manufacturers Association, 1794 McCormick Bldg., Chicago Ill.

159. Corrugated Boxes and How to Use Them—a reference book for use in the selection and packing of corrugated fibre shipping boxes. Hinde & Dauch Paper Co., 454 Decatur St., Sandusky, Ohio.

161. Fence—How to Choose It—How to Use It — book explaining in detail how to choose a fence, determine values and prevent costly mistakes. Cyclone Fence Co., Dept. 4211, Waukegan, Ill.

163. Roto-Koner—Bulletin describing the new No. 44 Universal Winder, known as the Roto-Koner for winding knitting yarns, which has many new and distinctive features. Universal Winding Company, 95 South St., Boston, Mass.

164. Johnson Rotary Pressure Joints—Bulletin describing this rotary pressure joint which requires no packing, no lubrication and no adjustment, giving installation and maintenance instructions, types, sizes, dimensions and prices. The Johnson Corp., Three Rivers, Mich.

168. The Tube-Tex for Tubular Knit Goods—Bulletin describing this modern machine which extracts, processes, dries, conditions and folds in one continuous operation, lowering costs, saving labor, power, space and waste. H. W. Butterworth & Sons Co., York and Cedar Sts., Philadelphia, Pa.

170. Gates Textile Accessories—showing the increased efficiency and economy to be secured through the use of Gates cone belts, evener belts, card bands and loom binder cushions. The Gates Rubber Company, Denver, Colorado.

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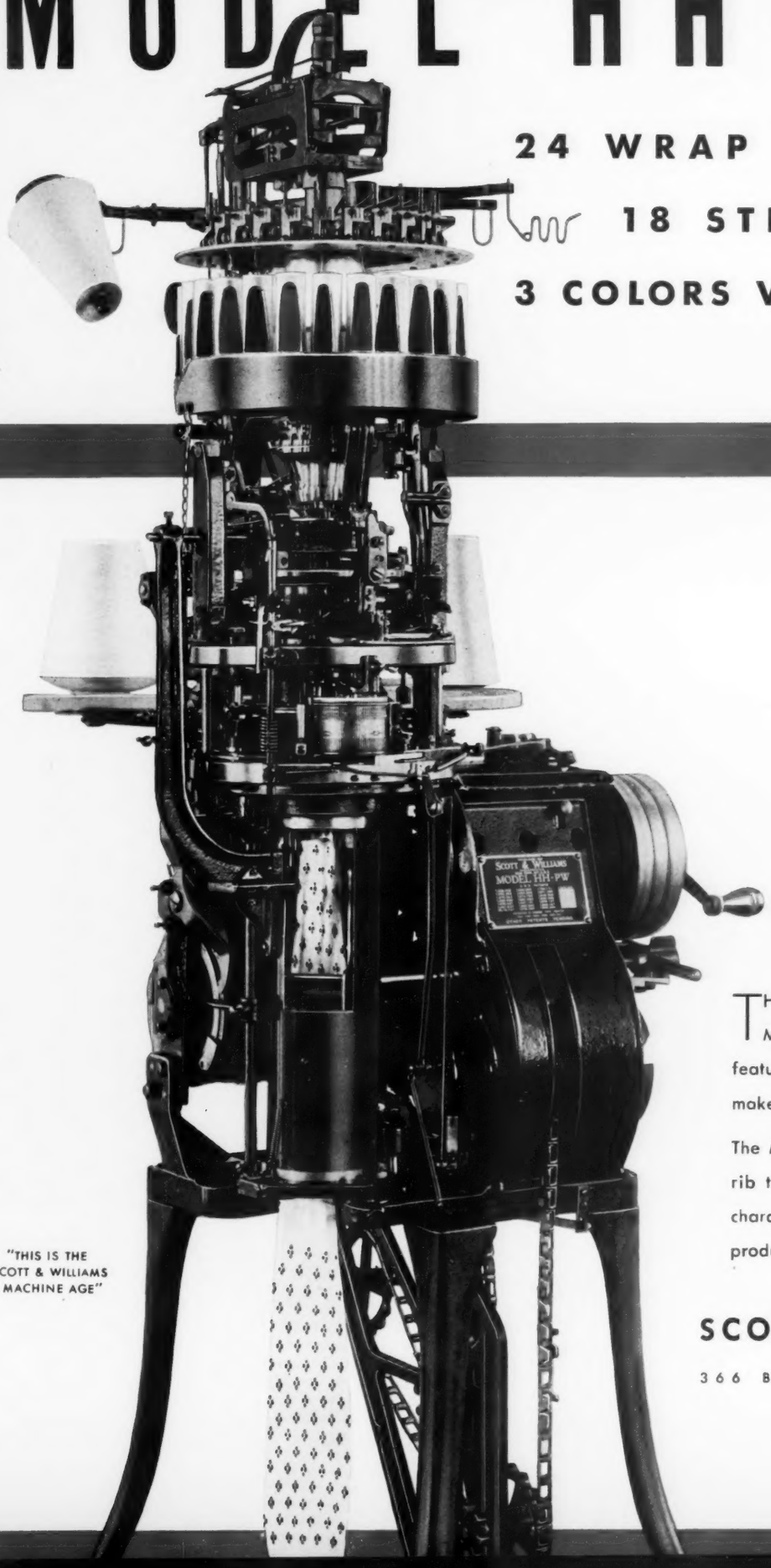

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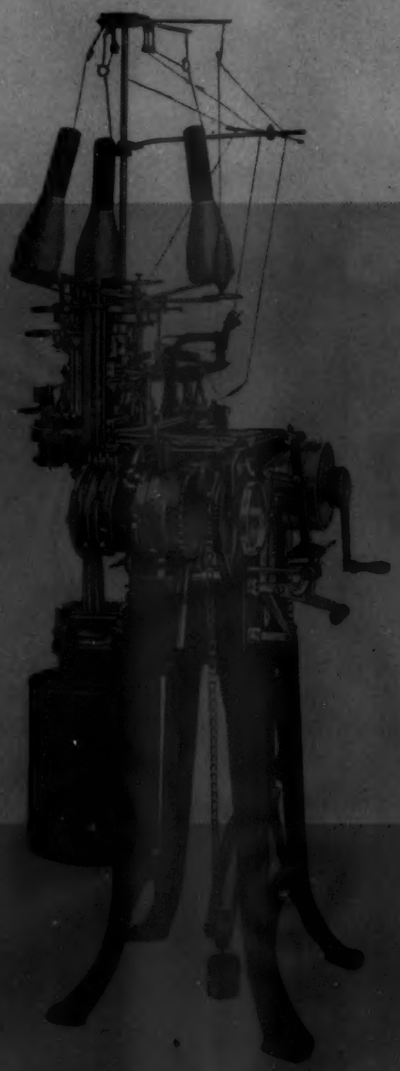

THE new DOUBLE FEED Komet Machine gives ⅓ more production and enables you to duplicate an exclusive line of fancies in English rib hose heretofore made only on full fashioned machines at very high retail prices.

The ⅓ increase of production may be utilized in making fancies or plain hosiery . . . and is adaptable to both children's and men's sizes.

A fully automatic machine, making a rib-to-the-toe stocking, 1 x 1 rib top, the genuine 6 x 3 English rib leg and foot or any combination of rib or plain hose, with a draw thread finished French welt and a 5 color selective striper at the main feed for striping cuff, body or both.

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STANDARD TRUMP
Established 1872

KNITTING SECTION

The Value of a Trouble Shooter in a Full-Fashioned Mill

By R. E. Sponagle

PLEASE allow me to address the following remarks directly to full-fashioned mill managers:

Do you, Mr. Mill Manager, hire a "trouble-shooter" to check the quality of your hosiery while in process? If you do not, you are indeed a short-sighted mortal. You will no doubt agree that it is good sense to keep at watch-dog around your home. Then why not have a watch-dog guarding the daily output of your plant?

Or perhaps you hail from the old school of knitters who crossed their bridges when they came to them. If so, your standard of efficiency is, of a certainty, not up to snuff. Relax, Mr. Manager—let me show you how you are allowing profits, profits that are rightfully yours, to slip through your fingers.

That the quality man, or "trouble-shooter", should be a permanent fixture in any wide-awake organization is hard to deny. The reason is apparent—he is the man that will keep your personnel "on its toes." One day he will be found in the legging department, next day in the footing department, next day in the finishing or perhaps the examining departments, never in any department at a specified time. In other words, he will be the factory Sherlock Holmes. No one will know just when or where he's likely to pop up and cast his all-seeing eye about. This fact alone will have a direct effect upon the whole working force.

Let me ask you a question, Mr. Manager. Do you honestly believe that your foreman or superintendent, no matter how conscientious he might be, can devote enough of his time to checking quality? Remember, he has a hundred-and-one jobs to perform and in trying to do all of them, he is indeed handicapped by lack of time. That is why you should have a quality specialist, or "trouble-shooter" in your plant .

Keen competition in the hosiery field makes it vitally important that high quality standards be maintained. An expert quality man will not cost you one penny—he will actually earn money for you—taking for granted, you select the right man for the job. This is of the utmost importance if the desired results are to be obtained.

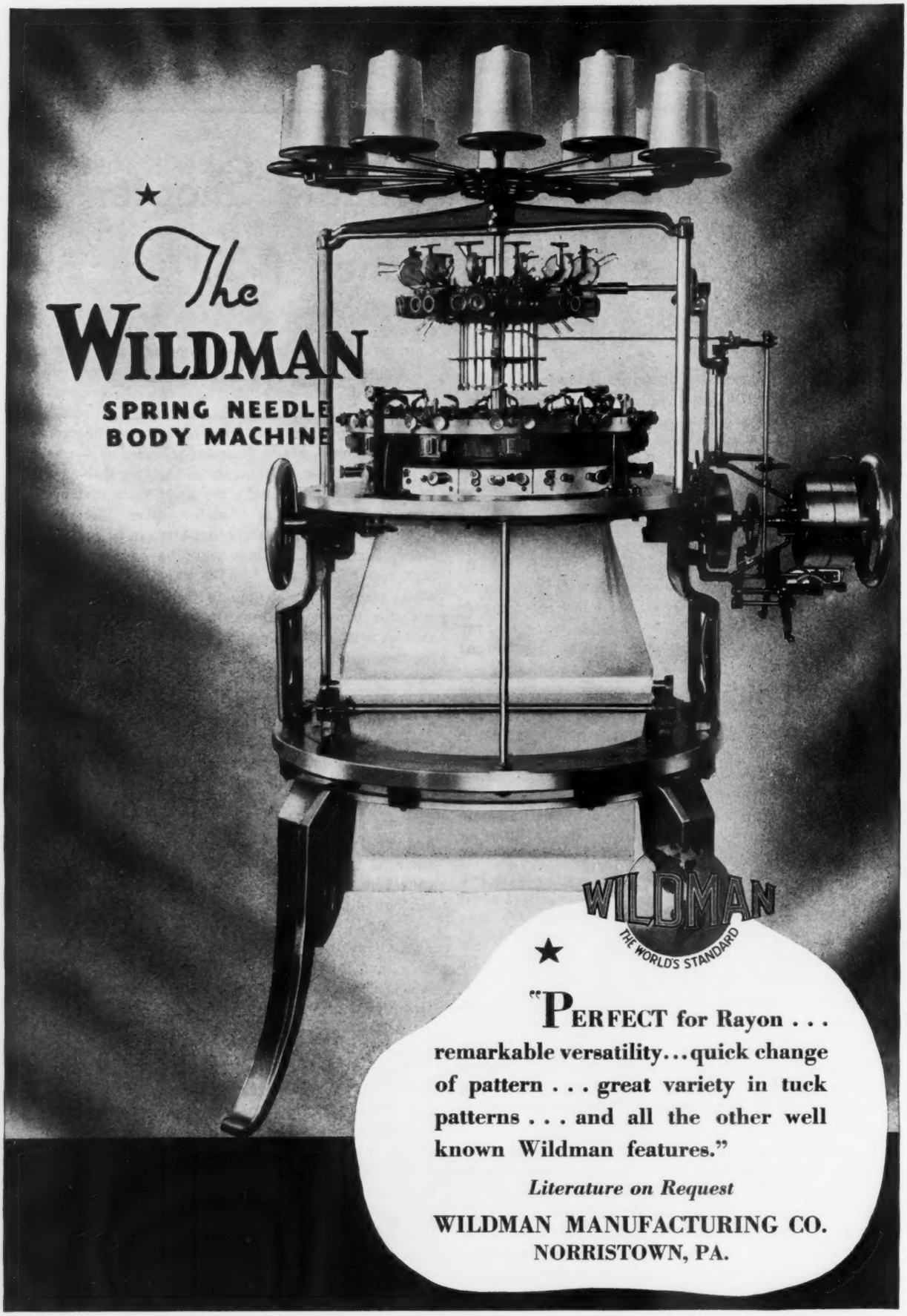
The "trouble-shooter" goes in to a department, digs up some faults or defects, notifies the department head or the superintendent of same and he is off, looking for more trouble. Gradually, some of these faults will be eliminated, others reduced to a minimum. His activities may not make him the best-loved man in your organization but he will become an indispensable asset to your supervising personnel.

Some of the requirements of the "trouble-shooter" necessarily must be, (1) He must be a man with a keen understanding of human nature. The working force must be sold on the importance of quality hosiery, furthermore, they must be educated to this fact, not bullied into it. We have out-lived the age when people were driven to work. (2) In order to put this program across, the man must himself be sold on quality. He must be conscientious and work for the best interests of all concerned. (3) He should be a dynamo of action, not only tirelessly hunting down defects and weak points in the product, but also following up and seeing to it that the faults are corrected. (4) Last, but not least, it is necessary that the man have a thorough understanding of each phase of hosiery manufacturing and know just what makes each operation tick. Theoretical knowledge will not suffice for this job. It is only the man that has been "through the mill" who will be able to steer clear of the yawning pitfalls that are so often responsible for the ledger being dotted with the wrong kind of ink.

Some might say—"a hard man to find". Right. But once you've found him, you will never let him go. You cannot afford to, once he has proven his value. Let me set down some of the duties of the "trouble-shooter".

In the Legging Department

Courses must be counted regularly. Is this being done? Uniform lengths mean a uniform product, less odd stockings at pairing and not so many to be re-boarded. Are the machines making clear fabric? If not, why? Isn't the silk conditioned properly, or maybe it doesn't have the right kind of soaking? Perhaps the felts on the machines haven't been changed recently. Possibly the needle bars are set too high, or the knock-over bits too low. It might be found that some knitters are taking off too many weights, resulting in a slackening of the take-off tension. It is important that there be enough jack-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spring pressure, also that the jacks are being oiled regularly.

Next, take the welt. Do the knitters immediately replace broken picot points so as not to make blind picots? Are the picots centered properly? When the welts are turned, if the welt bars are not set on the needles so that the selvages are even, a weak point will result. This is apt to break open when the stocking is stretched over the wearer's knee. How about the stitches that are dropped during the welt-turning operation; are they picked up in a sloppy manner so as to be an eyesore to the purchaser in the event she turns the stocking inside out? If so, she might change her brand of hosiery the next time she goes shopping.

Heels are all-important. They should be checked regularly for length. Too-short heels crawl down into the shoe; if they are too long, they are unsightly. How about the plaiting? You know, poor plaiting brings down that percentage of perfect goods in the finishing room. Maybe some machines are throwing loops along the inside splicing selvage. These show up in the finished product. Are the inside heel selvages rough? If so, broken needles will be the result at the footing operation; probably a weakness along the creasing line.

How about blind-stitches? What steps have been taken to reduce these customer-losers to a minimum? A good quality man will know how to combat this evil. A book could be written on this subject alone.

In the Footing Department

Bad legs at footing must be checked constantly. It is a source of loss that cannot be overlooked. Do the toppers top their legs even with the heel loose-course to guarantee a good job at seaming? A lot of stockings are spoiled at the footing operation due to pullers. What causes these pullers? Have steps been taken to reduce them to a minimum? Topper menders—just how are they controlled? Can they be checked back to the topper that makes them? In most mills, they cannot. Then there is the difference in stitch between the leg and the foot, at the instep—a serious source of seconds and one that must be checked daily. A sudden tightening or loosening of the footer stitch can cause 30 to 35 dozen seconds in a single day.

We will skip the looping and seaming department as the menders and seconds made in this department are usually negligible.

Take the all-important examining department. If the examiners are on a piece-work basis, their work must be re-examined daily—that is, a part of it. If this is not done, a lot of menders and bad work are bound to pass through to the finishing room. Besides, the examining department is the "trouble shooter's" most useful tool. It is here that he can, by special examinations, check bad work back to the knitting machines. The examining department is a good barometer of any mill's performance. Someone once said, "Show me a woman's kitchen and I'll know just what kind of a housekeeper she is." The same applies to the hosiery mill. One look at the examining department and it is at once evident just what kind of stockings the mill turns out.

The finishing room—here is where the final analysis is made—also where the headaches occur. Some leading quality mills have found it pays them to have a quality man stationed in the pairing department, a man who does nothing but trace bad work to its proper source. The managements of these mills have learned by bitter and costly experience that strict quality supervision is essential to good performance.

And now, Mr. Manager, I rest my case—you must pass final judgment. As an executive, can't you see the advantages to be derived from having a man devote all of his time to the studying and rectifying of your quality and production problems? Can't you also see the psychological effect this man's activities would have upon your entire working force? The average worker, you know, is primarily interested in production. That is what he, or she gets paid for. You are responsible for the quality of your product. It is therefore up to you, to keep your workers' interest keyed up to the quality angle.

The quality man, or "trouble-shooter" might readily adopt the following, as his slogan—"MORE QUALITY STOCKINGS—LESS RED INK". Why not make this slogan yours for the coming year. You must agree, it is "food for thought".

Courage!

In providing for the installation of 21 new 20-section 45-gauge full-fashioned machines, recently purchased from Textile Machine Works, the Knitting Department of Wiscassett Mills Co., junked the same quantity of 42-gauge machines, 18-section.

In addition, three machines, one 42-gauge and two 48-gauge, 20-section were purchased from G. Hilscher & Co., Chemnitz, Germany, through Grosser Knitting Machine Co., New York.

Above are two views of some of the machines that were junked. We think that so disposing of equipment which, though obsolete, was still in practical operation, typifies a high degree of business courage, more of which would greatly aid this industry.—R. W. P.

To sell stockings, a hosiery manufacturer has to please his customers. To sell needles, a needle manufacturer has to give hosiery men production advantages that lead to bigger profits. That we are America's largest producers of Spring-Beard Needles and that nearly all manufacturers of fine quality silk stockings are standardized on Royersford Needles is a tribute to customer satisfaction.

The prescription for better knitting

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ROYERSFORD NEEDLES

More Sales Innovations Affecting Hosiery?

SOME recent developments in retailing by large department stores have been commanding more attention, notably in the hosiery trade, than almost any departure from the conventional in the production of hosiery. Strawbridge & Clothier have been especially conspicuous in sales promotion by recourse to unusual devices, recently taking advantage of Government loans for facilitating purchases by persons finding it more convenient to buy on the credit plan than to pay cash. This was the first store in Philadelphia to use facilities provided by the Federal Housing Administration, for the accommodation of a supposedly profitable element of the store's clientele. This "New Deal" in retailing had its inception in the Federal Government's purpose to lend money to improve homes and enable householders to obtain modern equipment. The National Housing Act credit arrangement became effective in Philadelphia on July 8th. The plan for its operation is about as follows:

The customer selects the merchandise, up to this point buying in the regular way. A special store representative then explains the details and a blank is filled out and the customer is investigated as to his or her credit standing, etc., the customer's references being called on for information. Every detail in making the goods available to the purchaser is carried forward with the least possible delay, and if the application for credit is approved, the merchandise is delivered and the store's customer makes payment direct to a local bank. No down payment is required and the customer is given three years in which to make final payment of the loan. The customer need not necessarily be a home owner, to take advantage of this plan, but the Shoppers Bonus Plan—i.e., a discount of two per cent for cash does not apply to merchandise subject to the terms of the National Housing Act, it is said.

It is conceivable, according to some interests who have made a study of the plan, that it will conduce to larger individual purchases of seasonal hosiery, that is, women making use of the loan facilities would not think of stopping with the purchase of one pair of stockings, but rather would be inclined to stock up their wardrobes for the season with the purchase of a half dozen pairs or more. It is pointed out, however, that hosiery is not included in household equipment. But, it is suggested, it needs no stretch of the imagination to foresee the inclusion of lingerie. The store's notice of the plan for financing purchases covers such things as awnings, porch screens and screen doors, air conditioning equipment, refrigerators, ranges, oil stoves, bath room equipment and practically any article intended for beautifying or improving the home, even to wall paper and painting.

"What do you think of the scheme?" was asked of a nationally known hosiery buyer for a rival store. His reply was, "I think it is wonderful; anything that legitimately increases sale of goods is a good plan and I take my hat off to those who may have beaten us to it."

The same buyer was asked for an opinion on the Strawbridge & Clothier bonus plan—a two per cent discount on cash sales, and replied, "it is all right, but we have done something better, by so reducing our prices so that a buyer whether paying cash or carrying a charge account, is benefited to the extent of more than two per cent on his or her purchases.

"Is it not probable that some of these merchandising stunts are going to leave headaches for some of those who adopt them?" a buyer was asked. He admitted that some concessions to customers have been so generally abused that it is to be regretted they ever were inaugurated. "But", he went on, "I think store managements will be more careful in the future in the adoption of competitive measures than in the past. It appears to me just now that the cost of retail merchandising is unnecessarily high."

In the case of using the Federal Housing Administration's Loan Plan, the bulk of the cost will fall on the banks carrying the loans, but they will receive five per cent on the accounts which they carry for the stores. The unconditional guaranteeing of hosiery is expected to be discontinued by some of the stores which have been resorting to that method for increasing sales, principally for the reason that returns for exchange for a new pair, not guaranteed, are surprisingly heavy.

Hosiery Production and Sales Surpass Last Year's Figures

Shipments of hosiery from American mills during May 1935 totaled 9,124,359 dozen pairs, it is revealed by the monthly statistical bulletin of the National Association of Hosiery Manufacturers, published July 8. This represents a slight drop from the preceding month when shipments were 9,179,793 dozen pairs, and is also about 500,000 dozen pairs below shipments for the corresponding month of last year.

Despite the month's drop in shipments as compared with May 1934, total shipments for the first five months of this year, amounting to 45,392,111 dozen pairs, were approximately 830,000 dozen pairs ahead of those for the first five months of last year. May production, on the other hand, was about 930,000 dozen pairs below that of May of last year, although production for the first five months was approximately 623,000 dozen pairs above the corresponding period of last year.

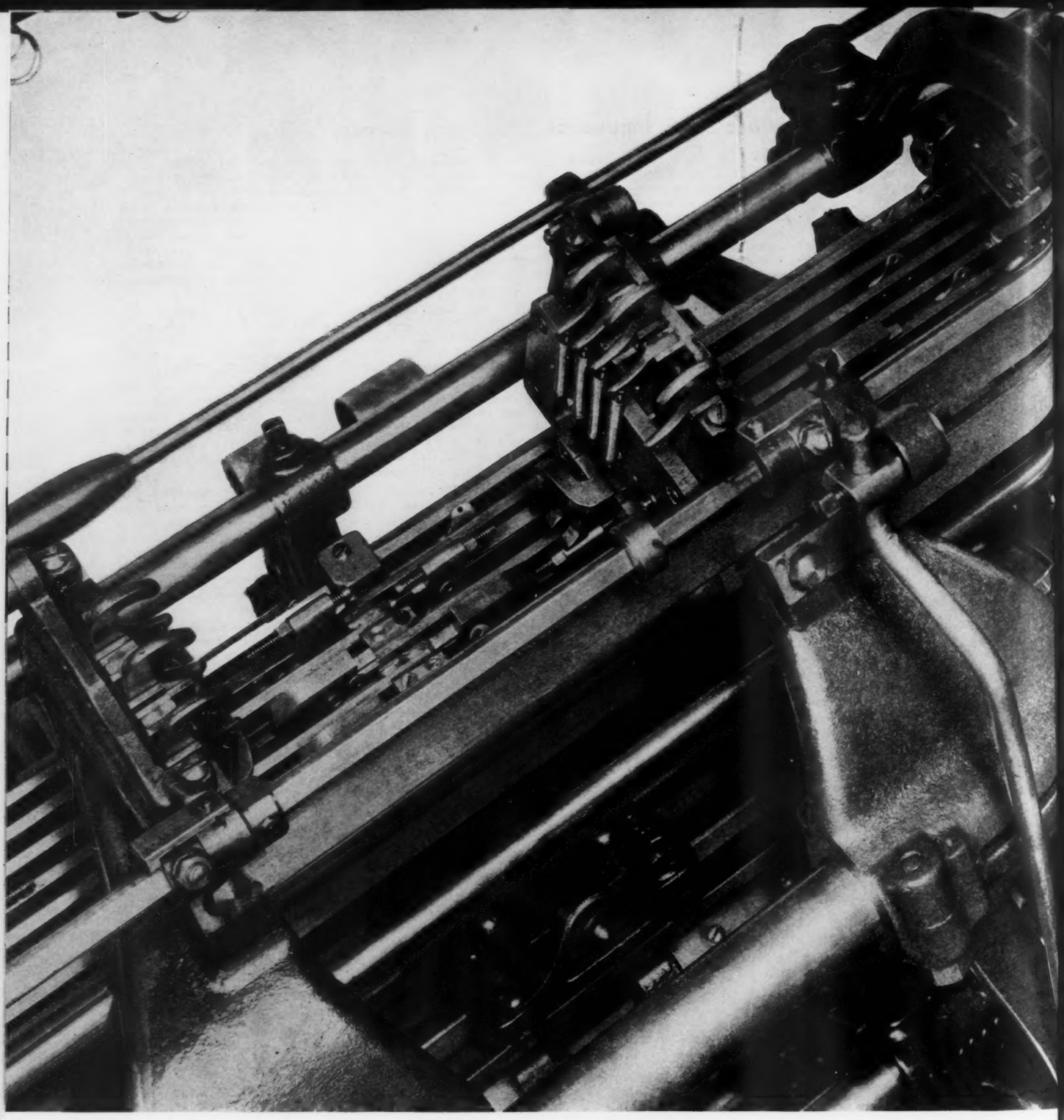
The month's production figure was 9,202,823 dozen pairs, which compares with 9,392,125 dozen pairs in April, representing a decline of about 190,000 dozen pairs. As already stated, the May production this year was over 900,000 dozen pairs below that of a year ago.

With production ahead of shipments, there was a slight increase in month-end inventories. Stocks on hand at the end of May were 19,039,971 dozen pairs as compared with 18,961,505 dozen pairs at the end of April and with 18,741,879 dozen pairs at the end of May 1934. Inventories are thus seen to be roughly 300,000 dozen pairs ahead of last year at the same time.

The most notable decline in production was registered in the case of women's full-fashioned hose, there having been actual increases in production of men's half-hose, children's and infants' goods, and cotton bundle goods. The most marked increases were in infants' anklets and boys' golf hose. Early in the spring, production of full-fashioned hosiery was proceeding more rapidly than shipments. During May, therefore, the National Association of Hosiery Manufacturers sent to all members of the industry a letter urging that they undertake voluntarily to curtail their production in order that a better balance might be maintained. The response to this suggestion was very general and it is probably largely as a result of this fact that marked reduction of full-fashioned production for May developed. The fact that total production declined for the month, despite an increase in several important types, gives evidence of the support that the full-fashioned branch gave to this suggestion.

In analyzing shipments for the month, the bulletin notes one or two departures from seasonal trends. Normally, there are declines in certain types, offset by increases in other types, so that the net result is little changed in May shipments as compared with April shipments. While there was a slight decline in total shipments during May of this year as compared with April, a notable increase was recorded in shipments of men's cotton half-hose, and a lesser increase in ribbed goods, contrary to past seasonal experience.

Comparison of statistics for the first five months of the current year with the corresponding period of last year reveals that, with the exception of full-fashioned hosiery, a much closer balance has been maintained between production and shipments. That is, where shipments have declined, production has declined more rapidly, and where shipments have increased, production has not followed as rapidly.



Full-Fashioned knitting machines equipped with the READING 3-Carrier Alternating Attachment and intended for making a cotton sole and cotton cradle foot can now be provided with the READING 2-Needle Closed Split Attachment. This device (patent applied for) eliminates the 4-needle overlap which causes a bulky line where sole and instep are joined. Write for particulars.

TEXTILE MACHINE WORKS ◆ READING, PA.

Looseness in the Edges of Full-Fashioned Leg Pattern

EDITOR COTTON:

In reply to the inquiry of "CONTRIBUTOR NO. 6371", page 111, March issue,* as to the causes and remedy for loose knitting at the outer edges on full-fashioned legs, I am of the opinion that the cause is worn sinkers and dividers, and needles leaning slightly backward due to continuous operation of these parts nearer the center of the head. The outer edges of the head narrow out of operation and these parts are subjected to less wear and naturally these less worn parts will knit looser.

The remedy for this condition is to open up the regulating or slacker cam which is a split cam, and put a thin piece of cardboard between the two outer edges where the two sides meet. This will raise the center of the cam to make it slightly eccentric and cause it to knit looser in the center of the head to agree with the loose outer edges. Then the whole head can be tightened to the desired tension.

I feel sure this slight adjustment of the slacker cam will correct the trouble outlined.

CONTRIBUTOR NO. 6377.

EDITOR COTTON:

The problem of looseness in the edges, as submitted by "CONTRIBUTOR NO. 6371", is a common problem on full-fashioned leggers, less common on both edges than on one edge. The most common cause for one edge knitting loose is improper adjustment of the verge plate or needle bar. The most common cause for knitting loose on both edges is bad alignment of the needles on each end of the bar.

The normal tendency is for the needles on each edge of the bar to be gradually worked back out of alignment by the narrowing points. This causes tight fabric on either edge rather than loose, but sometimes the narrowing machine is so set or adjusted that it is necessary for the knitter to plier the needles forward on either edge of the head in order for them to properly engage the narrowing points. In this case, the fabric will be looser on either edge.

This contributor's theory as to the cause of his trouble is not correct. He states that his verge plates are in good condition. If his verge plates are in good condition, the first few sinkers on either edge of the head could not be thrown farther than the remainder of the sinkers. because the verge plate and slurcock should be so closely adjusted that each sinker will be driven its full length of travel by pressure from the slurcock and not from momentum of travel.

He is also wrong in his theory that tension increases a bit more away from the selvage. The motion or travel of the threads must necessarily come to a dead stop with each stroke of the carrier, so that the greatest tension stress is produced in overcoming the inertia of the stopped thread and starting it up again. Most naturally, the thread will flow easier after it is once started. It is admitted that it is desirable to run the slurcock forward as far as safety will permit. This being done on a properly adjusted sinker head, needle bar, and with proper alignment of needles, will undoubtedly correct the trouble.

I might state further that it is common knowledge that needle bars get bent through usage, and are sometimes bent when received on new machines. I would suggest that the inquirer carefully check his machine for this trouble. It is possible that he will find slight curvatures on the needle bar to be responsible for his trouble.

CONTRIBUTOR NO. 6378.

Watch for some spicy backstage discussions on these answers in an early issue.—The Editor.

(*) The original question prompting this discussion, appeared on page 111 of March 1935 COTTON, as follows: "One thing that has given me quite a bit of trouble in knitting full-fashioned hosiery is a looseness at the edges on either side of the fabric. This is more noticeable in the wide part of the boot or to the main narrowings. I have taken all ordinary means such as the proper gauging, etc., and, too, I might say the verge plates are in good condition, so what would you suggest I try next? I have my ideas or theories but don't know that they are right, but I will set them down here: First, when the slur-cock strikes the first few jacks, the sinkers are thrown forward farther than the remainder of the sinkers because the tension on the silk increases just a bit more away from the selvage and will hold the sinkers in check. Second, the loose course is always on the starting side and not on the finishing side. Third, by running the slur-cock forward as far as safety will permit, we can improve the fabric."

WE invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All acceptable contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statement of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

◆ ◆

Questions on Dyeing Knit Fabric

EDITOR COTTON:

I would be glad to see some discussion in your columns with reference to the following:

Is it practical to dye knit fabric containing cotton and acetate with developed dyes leaving the acetate yarn white? The writer finds that most all developed dyes stain the acetate during the developing process.

Still another question: What are the brightest fast-to-light direct dyes for producing a nile green shade on cotton knit goods? Would you advise using a blue and yellow to produce a green, and if so, how would you proceed so as to produce a level dyeing?

CONTRIBUTOR NO. 6404

Disposing of Press-Offs and Spoiled Stockings, Using the 3-Carrier Attachment

EDITOR COTTON:

This replies to the inquiry of "CONTRIBUTOR NO. 6364", who asked on page 111 of the March issue of COTTON for discussion as to methods of disposing of press-offs and spoiled stockings in the gray, in using 3-carrier attachments on full-fashioned hosiery machines.

We have never found a better method of disposing of press-offs than that of the knitter topping them back on during the course of the day in which the press-off is made. This is of course the writer's individual opinion. We know other manufacturers who are happy in their system of backwinding their press-offs, and still others who are happy in selling their press-offs as waste. Such manufacturers will claim advantages such as keeping machines more actively engaged in production as compared with allowing the machine to stand idle while press-offs are being topped back on. So far as we are concerned, we have always had a horror of a waste bin, and we have never found that backwound silk would work as satisfactorily anywhere as the original wind. Then, too, the system of backwinding serves very materially in causing two-tone effects in dyeing, and even though it may be used in the heel or toe for splicing yarn, it will show up at a disadvantage as compared to original winding and will frequently produce seconds. At the same time, either a system of backwinding or one of selling the press-offs as waste has a strong tendency to produce carelessness on the part of the knitters, causing more press-offs than would normally be found if knitters were required to top their press-offs back on.

Any system employed in disposing of press-offs has its points of advantages and disadvantages, but taken as a whole, we believe that topping back on is the best solution. Naturally this cannot be done successfully until the knitter is thoroughly trained, and then good conditions can come only where a knitter's working conditions and pay are so satisfactory as to cause him to be a co-operative knitter. So the question resolves itself into one of first having well trained, well treated, satisfactory operatives, and when those of different characteristics develop, getting them out of the way. Under these conditions, press-offs should be reduced to a very satisfactory minimum no matter which system is employed, but we still believe that topping back on will stand the test of very careful thought and investigation.

Finally, we may add that we understand there are now on the market attachments to be used on backwinders for re-winding 3-carrier fabric.

CONTRIBUTOR NO. 6365.

Preventing Streaky Dyeing and Curling on Balbriggan and Rayon-Cotton Mixtures

EDITOR COTTON:

This answers the questions of "CONTRIBUTOR NO. 6392", published on page 99 of July COTTON, with reference to cotton balbriggan cloth and mixtures of rayon and cotton. He stated first that he is having trouble with streaky dyeings on this type of cloth, and wishes to know what method should be used in the bleaching of the fabric prior to dyeing light shades.

One of the best practical methods for obtaining a good white bottom for light shades on cotton, or cotton and rayon mixtures, is the use of sodium perborate and sodium phosphate run as follows: After the reel machine has been loaded with the cloth, run in enough cold water to allow the cloth to work well, and then add, on the weight of the goods, one per cent sodium perborate and one-half per cent sodium phosphate; bring both rather rapidly to 180 degrees F., and run at this temperature for ½ to ¾-hour, depending upon the color of the gray goods that entered the machine. On combed yarn cloth, ½-hour should do, but some carded yarn cloth may take ¾-hour to get a satisfactory bottom before dyeing light shades.

After this operation, wash the goods well in a warm water bath, then cold, and then the cloth is ready for dyeing.

If the reel machine has been used for light shades the perborate treatment can be done right in this same machine, and the dyeing can follow, thus saving a transfer to another machine.

This method works out very well, and has the advantage of giving a good, even bottom to the cloth before dyeing, whereas other bleaching methods are liable at times to give the cloth an uneven bottom. It is a very mild treatment and also is a time-saver for the results obtained.

This man stated also that he is having trouble with curling of the fabric in the finishing department prior to sewing the garments. One practical way to prevent balbriggan cloth from curling after being cut is to run the cloth, after it comes from the knitting machine, or after it has been dried from wet processing, through a luke-warm sizing bath as follows: One pound of corn starch to 100 pounds of cloth. Run hot 120 degrees F., and feed on as cloth goes through the wet-out machine; or on the gallon of water basis—3 ounces of starch per gallon of water used in the wet-out machine. *Do not extract,* but run at once through the dryer and pass through steam conditioning machine one size under the spread marked on the roll; for example, if marked 17-inch, run through 16-inch spreader. Any piece dyeing or wet-out machine can

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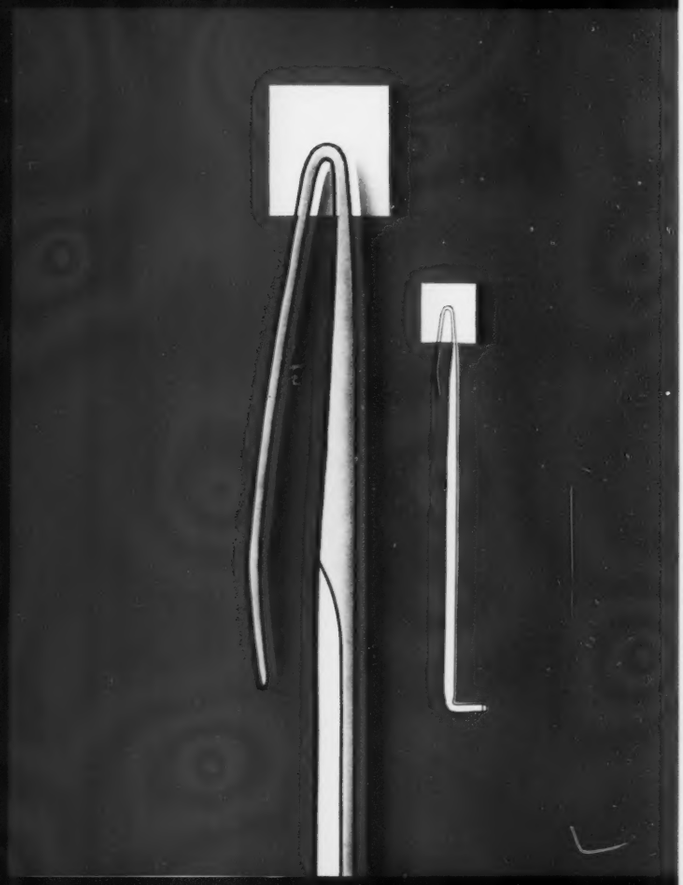

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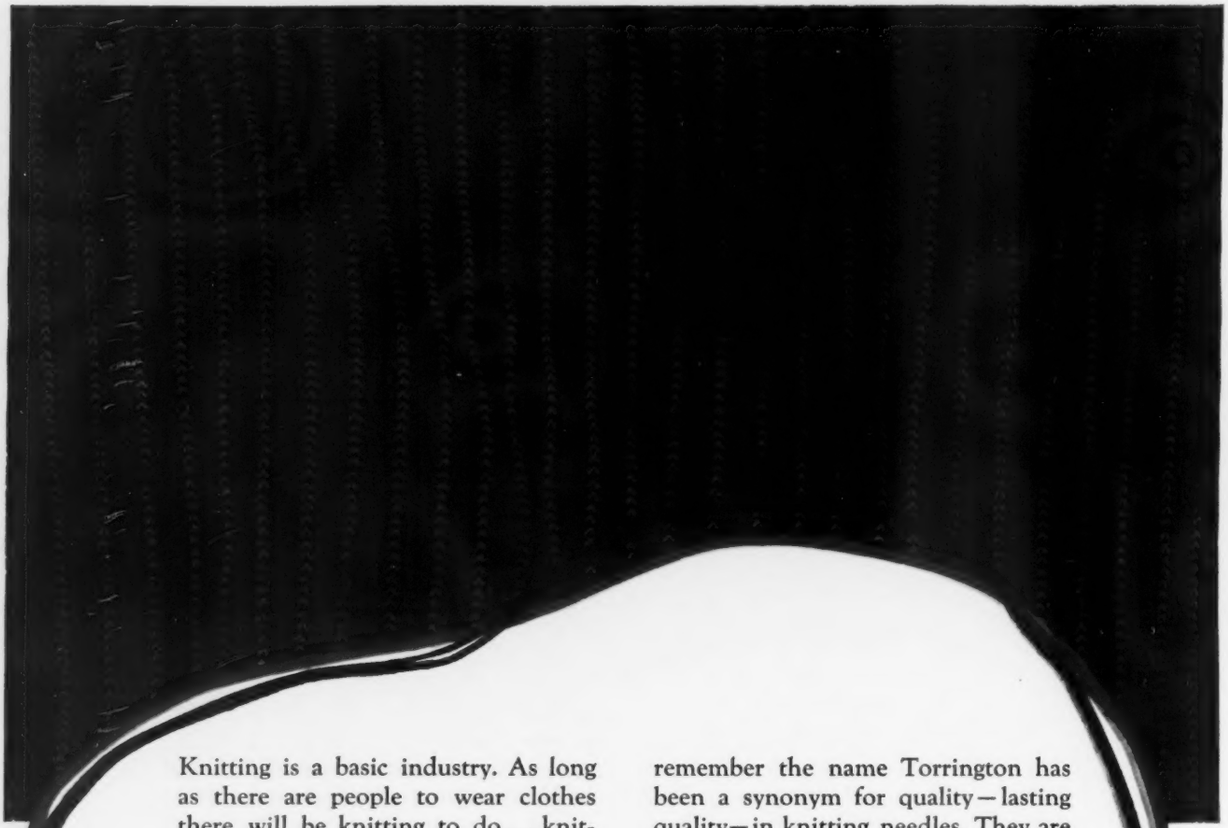

Knitting is a basic industry. As long as there are people to wear clothes there will be knitting to do... knitting that demands the services of good operators, good machines—and *good needles*.

Good needles are staples... vitally necessary in the production of beautiful fabrics.

As far back as the oldest knitter can remember the name Torrington has been a synonym for quality—lasting quality—in knitting needles. They are part and parcel of a good knitting policy. Skilled operators the world over like to use them—because they are strong, smoothly finished, uniform. If you are seeking ways to improve the quality of your fabrics begin with needles. Standardize on Torringtons.

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TORRINGTON NEEDLES

Latch

be used for this sizing operation. This is only a wetting-out process.

This starch will stay in the cloth until after the cloth is cut, keeping the cut edges out flat, allowing no trouble in machine finishing, and will work itself out before the garments are boxed, so that the cloth will be entirely soft when they are ready to ship. A variation in the amount of starch may have to be made to fit the individual needs. After coming from the dryer the cloth may seem too stiff, but it will not be to give the best results.

CONTRIBUTOR No. 6396

Helpful Hints on Standard Knitting Machine Fixing

(Editor's Note—This is the twelfth of a series of articles discussing the parts of Standard knitting machines and giving helpful, practical suggestions on fixing them. The first article appeared on page 129 of April 1934 and gave a history of these machines. The second article, on page 127 of May 1934, covered the parts shown on Plate I in the Standard catalog. The third article, covering Plates 2, 2A and 3, was on page 105 of the July 1934 issue. The fourth article, covering Plates 4 and 5, was on page 101 of the September issue. The fifth article, page 105, November issue, covered Plate 6. The sixth article, on page 107, January 1935 issue, covered Plates 8, 9, 10, 11 and 12. The seventh article, page 111, March 1935 issue, discussed Plates 13 and 14. The eighth article, page 134, May issue, covered Plates 15, 16, 17, 18 and 19. The tenth article covering Plates 20, 21 and 22, appeared on page 125 of the June issue. The eleventh article, page 99, July issue, covered Plates 23 to 24A inclusive.

The numbers in parentheses following the names of parts are the numbers used by the machine manufacturers for the various parts. It is suggested that the reader refer to the plates in question in the Standard catalog in reading these discussions, and that he clip these articles and file them in the catalog with the various plates for further reference.)

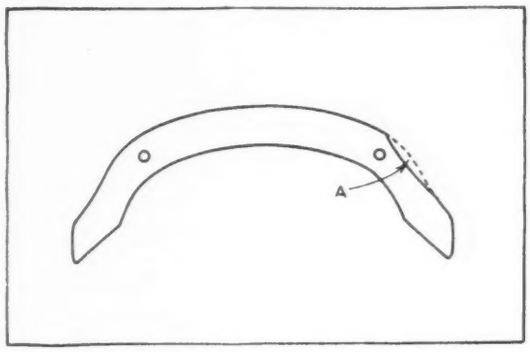
Plate 25

EDITOR COTTON:

The pineapple or lace attachment shown on the upper part of Plate 25 is numbered among the first devices which were developed for the plain Model H machine. The device is operated by steel cams (K-745) and (K-742) to make single tuck or double tuck stitches, these cams being fastened to the main drive shaft. One end of lever (K-65) rides against the steel cams, the other end is provided with a steel piece (K-2681) which comes in contact with special chain links (K-533) which are used to make a pineapple stitch or links (K-360) for a lace stitch.

Lever (K-283) is attached to the back of the machine frame with screw (K-722) and lever (K-65) is in turn pivoted on lever (K-283) with screw (H-623). When the steel piece (K-2681) comes in contact with the special chain links, the rod (K-648) draws the right-hand stitch cam slide out just far enough to permit a special arrangement of needles plus a special right-hand stitch cam to make either a pineapple or lace stitch as desired. The right-hand stitch cam has a shoulder on its forward outer edge immediately under the top cam; the top cam is ground out on its under side as shown on the plate to permit passage for the long butt needles when they ride over the shoulder on the stitch cam. Long butt needles with long latches are used in the long butt side to make the lace or pineapple stitch; medium butt needles with regular length latches are used in place of short butt needles for the plain stitch; and short butt needles with regular length latches are used between the medium butt needles to make the lace or pineapple stitch. The short butt needles are placed between the medium butts to match the arrangement of long latch needles in the long butt.

When the device is in action, the rod (K-648) draws the right-hand slide out just far enough to permit the short butt needles to pass in *front* of the stitch cam, which permits them to *hold* their stitch or tuck; the medium butt needles pass over the stitch cam and shed their stitch. The outward movement of the right-hand stitch cam causes the long butt needles to drop off of the shoulder on the cam, thus permitting the long latch needles to hold their stitch or tuck. Better results can be secured with this device by grinding out the sinker cam as shown at *A* on the sketch herewith. Now for a few helpful hints in connection with this attachment.



Be sure that the right-hand stitch cam slide works freely, also that the rod (K-648) does not bind where it passes through the hole in lever (K-283). Levers (K-65) and (K-283) must work freely. Keep sufficient tension on the pattern chain to prevent it from buckling. Replace the steel pieces (K-2681) when they become worn. See that the device is properly lubricated.

It must be remembered that the lace stitch is made on two different lengths of needle latches, therefore the position of the cylinder in relation to the stitch cams will have a great deal to do with both plain and lace knitting. Do not attempt to even the stitch cams in the heel and toe by adjusting the bumper screws, rather even up the stitch cams. Best results can be secured in both plain and lace knitting by keeping slightly more tension on the leg and heel yarns than normal; excessive tension on either heel or leg yarns, however, will cause tucking in the plain knitting due to the cylinder being raised to loosen the stitch.

The Tucking Attachment

The tucking device shown at the bottom of Plate 25 is used principally to make imitation fashion marks in ladies' hose. It operates in the same manner as the lace attachment, using cams (K-654) and (K-655). Extra short butt needles are placed between the short butt, when the stitch cam and slide are drawn out the extra short butt needles pass in front of the right-hand stitch cam to make the tuck stitch or fashion marks. Both devices are simple in

construction and operation and do not give a great deal of trouble.

Plate 26

The block pattern attachment shown on Plate 26 was not very extensively used; it is considered obsolete to the best of my knowledge. The same applies to the parts shown on Plate 27. A discussion of these plates will therefore be omitted.

Plates 28, 29 and 30

The Horizontal Striping Attachment

The detailed parts of the horizontal striping attachments are shown on Plates 28, 29, and 30. Striping attachments are available for practically all seamless machines being built today; none is more simple in construction nor more positive in action than the Standard attachment.

The outstanding feature of the Standard striping attachment is its extreme flexibility. Any desired combination of stripes in three colors can be produced from one course up; each color can be selected individually for any desired number of courses. The selection of colors is made by stripe chain links (K-1386, 1387 and 1388). These are shown on Plate 15-A. Plain chain links are placed between the selecting links. They determine the number of courses to be knit for each stripe. Each link in the stripe chain represents one course of knitting. The pin link (K-1385) shown on Plate 15-A is used to stop the striper chain at a given place which automatically re-times it after each sock is completed.

In changing from one combination of stripes to another, it is only necessary to re-arrange the various stripe chain links. No other adjustments are required. Consequently, changes can be made in a short time with a very small loss in production and at a small labor cost.

The necessary motive power to operate the striping mechanism is secured from an eccentric cam (K-1395) which is attached to the driving gear (K-1393) as shown on Plate 28. A shoulder on the driving gear keeps the cam centrally located and elongated holes are provided to permit advancing or retarding the yarn change laps in case they fail to come in the center of the short butt needles. The striper lever (K-64) is attached to the top of the machine frame with pivot screw (K-1392), and an eccentric stud (K-632) and the cam roll (K-631) are used to transmit motion to lever (K-64). One end of spring (K-1945) is attached to the striper lever as shown on the plate; the other end is attached to the yarn bracket, the pull of the spring keeps the cam roll against the cam (K-1395) constantly. The ratchet (K-1398) and striper chain sprocket (K-1383) shown on Plate 29 are driven by the pawl (K-1408) which is pivoted on the outer end of lever (K-64).

Lowering the yarn change finger is accomplished by the three cams (K-1375) which are pivoted on the striper lever with pivot screw (K-1399). These cams come in contact with operating levers (K-1363, 1364 and 1365) which are pivoted on the split shaft (K-1371) and (K-1372). Downward pressure on the upper tails of levers (K-1363, 1364 and 1365) by cams (K-1375) causes the lower prongs of the levers to push the slides inward, thus lowering the yarn change fingers.

Two guide screws (K-1420) keep the lower ends of levers (K-1363, 1364 and 1365) in alignment with the slides.

As stated previously, the finger selection is made by three different heights of lugs on the striper chain links. These lugs come in contact with the steel piece (K-1391), causing the levers (K-66) and (K-1381) to raise upward. The upward movement of lever (K-1381) lifts lever (K-1378) causing it to rock back and forth, which permits lever (K-1389) to come in contact with lever (K-1375) and select the various fingers according to the heights of the striper chain lugs. The proper throw for lever (K-1378) can be secured by making use of the adjusting screw (K-863), lever (K-1381) is also provided with an adjusting screw.

The steel piece (K-1401) is used to stop the striper chain and re-time it. It is operated by the pin link (K-1385) which passes directly under it, causing lever (K-66) and its assembly to raise and render it inactive when the lower end of the steel is resting on the pin link. The striper chain ratchet is set in motion by the starting pawl (K-1380). The lever arm end (K-3284) is also used to start or stop the striping chain sprocket. It is pivoted on screw (1384) and operated by a series of steel cams which are attached to the under side of the pattern disc. Ample bearing surface for the striper ratchet (K-1398) and sprocket (K-1383) are provided by the body or hub (K-1400) shown on the bottom of Plate 29. The friction plate (K-1402) with pads (K-1403) are used to keep sufficient friction on the sprocket (K-1383) to assure a steady motion.

Plate 30

The remaining parts of the striping attachment are shown on this plate. The lever (K-69) serves two purposes: it supplies the means for raising any lowered stripe finger and it operates the clamp and cutter lever. Raising a lowered stripe finger is accomplished as follows: when lever (K-67)—shown on Plate 28—comes forward, its screw (C-932) comes in contact with the lower end of steel piece (K-1376), causing lever (K-69) to raise. The lifting piece (K-1377) being attached to lever (K-69) raises the detention levers (shown on Plate 1) which permits the spring on the yarn change slide to raise any lowered stripe finger.

The clamp and cutter lever for a striper attachment is similar to those on plain machines except that it has a wing on one side for adjusting screw (K-939). The forward end of lever (K-69) comes in contact with screw (K-939) causing the clamp and cutter lever (K-68) to raise at every yarn change. The yarn tension arrangement and the yarn eye plate for the three color striper are shown on the bottom of Plate 38.

It is essential to have a reasonable amount of tension on the stripe yarns in order to make yarn changes efficiently. Too much tension, however, will

cause cutting in the yarn change laps, especially if the goods are knit tight. Since each strip is knit with the same tension screw adjustment, it is necessary to keep an equal amount of tension on the respective yarns.

If the pull on the different yarns varies (which they usually do), it will be necessary to adjust each tension in order to get a uniform stitch in each stripe.

Keep the clamp and cutters in A-1 shape. Seconds and waste will pile up immediately if the clamp and cutters are neglected. There are quite a few moving parts on the striping attachment which must work freely, consequently they require a certain amount of lubrication; see that the complete attachment is thoroughly lubricated at regular intervals. Too much friction on the Plate (K-1402) will cause the pawl (K-1408) to wear out prematurely. It will also have the same effect on the cam roll (K-631), cam roll stud (K-632), and the eccentric cam (K-1395). If the respective yarn change laps are not of equal length, check up on the adjustment of screws (H-1106), also make sure that levers (K-1363, 1364 and 1365) are not sprung from abuse. If the yarn fingers do not lift out freely, test each finger and each yarn change slide. Deposits of gummy oil will often cause them to bind and prevent quick action. Remember that the lifting action of the striping fingers is entirely dependent on the slide springs (K-1038). They may become weakened through constant use; if such is the case, do not *shorten* the springs, but *replace* them.

The Six-Color Striping Attachment

This attachment is shown on Plates 3-A and 3-B. It is a duplicate of the well known three-color attachment in every respect and operates in exactly the same manner. Six different heights of striper lug links as shown on Plate 3-B are used. All adjustments for this device are made in the same manner as on the three-color attachment.

MARTIN A. SHAW

A Suggestion for Full-Fashioned Contributors

To which we say, AMEN!—The Editor.

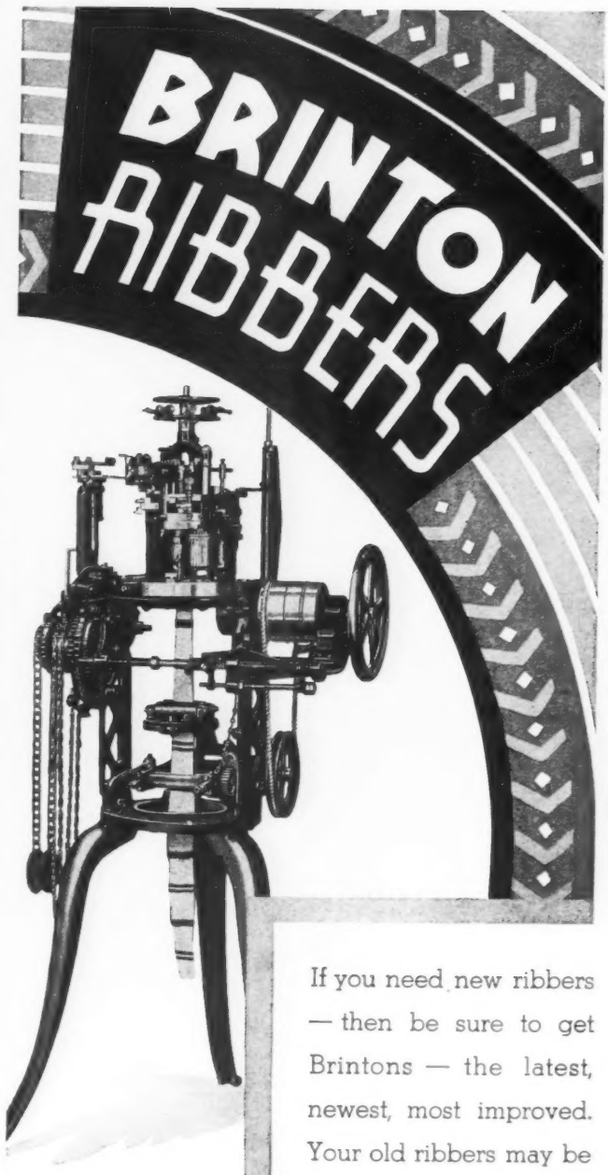
EDITOR COTTON:

I would suggest to the contributors to your "KNITTING KINKS" Department, dealing with full-fashioned problems, that they make certain to cover the following points in any of their contributions. No trade secrets would be involved and the inquirer could very often be given more help with this information:

1. Mention the type and gauge of machines.
2. Give the size of the machine as regards the number of sections.
3. State whether low or high speed machines, or give the speed of operation in courses per minute.
4. State whether knitting direct from throwster cones or rewound bobbins or cones, moist or dry.

It is at best difficult to analyze a man's problem just from a written description of it and each questioner should include the foregoing points.

CONTRIBUTOR NO. 6408



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HOLLYWOOD AND PARIS INSPIRED SPORTSWEAR PRACTICAL FOR VOLUME SALES

Too often Hollywood and Paris have said, "This is the style in sports wear" and the average American woman has been forced to reply, "It's nice, but I can't afford it." But knitting skill and durene yarn are bringing style and women's needs together, and a newly enlarged market is being created.

Dixie durene offers able assistance to knitters of sports wear, just as it helps knitters of hosiery, underwear, outerwear and accessories. Here again the controlled finishing processes that keep dyed Dixie durene soft and pliant for easy machine operation and accurate styling are of immediate help. Dixie durene's uniformity through all counts once more proves valuable to knitters working to keep production costs in line for volume selling.

Dixie durene's natural fibre strength and absorbing power, developed by completely controlled spinning and processing, put selling features into sports wear that make favorable impressions on consumers.

Dixie durene is making valuable contributions to the production and selling of sports wear, underwear, outerwear, hosiery and accessories. Dixie's representative will gladly get you samples that will show what it offers in your line.

Dixie MERCERIZING COMPANY, Chattanooga, Tenn.

Dixie Durene — A Product of Controlled Manufacture

THE KNIT GOODS MARKETS . .

Report on Business in Full-Fashioned

SOME fair sized orders for women's and misses' silk full-fashioned have been placed for delivery in August.

It is stated by a person in position to speak by the records that there is an understanding among resident and syndicate buyers to make no change for the present in the character of their commitments for hosiery. The idea is to favor fill-in spot delivery orders and to encourage no contracting for fall delivery.

Retailers in the more fashionable shopping centers are desirous of disposing of present stocks before doing any buying in anticipation, for the reason it appears that somewhat darker shades will be the vogue. The sun tan shades at present prevailing are to be passed to the consuming public, and there was special interest in promotion sales in July, for the reason that inventorying was to be completed by the end of the month and necessarily stores were interested first in reducing their holdings, and second, in deferring contracts for fresh goods for fall as long as possible.

In an analysis of the business coming through in August for women's full-fashioned hosiery, it appeared that the more important orders were from large stores in the popular price class such as are conspicuous in every large retailing community. While the orders are of the blanket character, manufacturers state in reference to this business that they have no doubt as to the specifications being received early in August, and it is predicted that immediately following Labor Day there will be seen a swing to business in hosiery on a more nearly normal scale.

Philadelphia, Pa., July 16, 1935.

THE extent to which the American hosiery industry shall live up to the provisions embodied in the voluntary agreement by which a great majority of the manufacturers are pledged to practically disregard the elimination of the hosiery code, as well as all of the industrial codes that were intended to be the main cog in the NRA machinery, will be a determining factor, largely, in the status of the hosiery markets for the fall and winter seasons, preparation for which is under way.

Excess production of virtually all classes of hosiery, in relation to consumptive demand, was a development of conditions while codes were theoretically, at least, being enforced by Federal Government NRA administrative bodies. Manufacturers then operated under a form of government control, and from the standpoint of protecting their markets, the "system" proved one of the experimental failures.

Whether under self-imposed regulation manufacturers shall make a better job of the efforts at maintaining a more nearly stabilized and more profitable market than marked the attempted control of business by, mainly, persons with very little practical knowledge of successful business methods, it may be regarded a foregone conclusion that the answer to this question was given in results from the voluntary curtailment of plant operation during June. It may be significant of the proposal that business, like ailing mortals, may postpone remedial action until forced by circumstance to take its medicine, bitter as the remedy may be. Hardly had the United States Supreme Court scrapped the NRA codes than hosiery interests set about rewriting the essentials of the regulatory measures which had been ruled invalid. In fact, manufacturers instantly became more interested in self regulation than seemed manifest, in many particulars, in support of the policies of the silent co-partnership existing in Washington. And the result of this activity is seen in what is virtually the first nation-wide agreement for co-operation by a majority of the units in one of the country's leading industries.

The hosiery industry is not unanimously pledged to the principles of the voluntary pact as approved by a very large majority. But it is to be assumed that many of those who for reasons of their own chose to remain outside of the fold are as much concerned with the success of the first practical experiment in organization of the hosiery industry as a whole as are those who sponsored the movement. many of them, whether pledged or not, will co-operate in any developments promising of the industry's "recovery". What already has been accomplished in three codeless months may prove the foundation of a trade organization in textiles as powerful as that represented in the U. S. Steel Corporation. This is, in any event, the aim of those who have been the more active in elimination of the evils of the "go as you please" policies of the past.

Three-Day Week Continued in July

Production of hosiery was very materially curtailed during June and for some time prior to and following that month—some of the important mills continuing the three-day week schedule during a part of July. This was true particularly as to the Apex Hosiery Co. in Philadelphia, which resumed operations on a three-day schedule on July 10, after being idle since the close of business on July 3. While it was not stated specifically that many other mills pursued a like policy during the very quiet markets early in July, it was understood that resumption of operations on a five-day week schedule was no means general. It had become apparent that curtailment had not gone far enough to stabilize prices and bring buyers to an understanding of the expediency of at once shaping their fall campaign.

It was a common expression among buyers for the trade that stocks of hosiery available for immediate delivery were well in excess of what the market at the time was absorbing. This was not unknown to manufacturers, who realized that many of the buyers were withholding substantial business in the expectation that the price structure will not long withstand such an attack as had been suffered during the late spring and early summer. Leaders among manufacturers, having first hand knowledge of the attitude of mill managements in wide territory toward prices, took a different view, maintaining that, although the traditionally dull summer had to be reckoned with, producers of silk full-fashioned hosiery were expected to maintain a solid front.

The Full-Fashioned Hosiery Association, Inc., offices in Philadelphia, expressed assurance about the middle of July that the membership was 100 per cent pledged to the volunteer agreements as to wages, hours, child labor and trade practices. So far as this association was aware, said Secretary Charles Lehmuth, not one full-fashioned manufacturer, whether a member or non-member of the Association, had departed from the middle of the road with respect to the agreement. It was especially emphasized in the trade that the Southern Hosiery Manufacturers Association had gone on record in support of the voluntary agreement virtually continuing in operation the essential provisions of the hosiery code as established under the NRA but ruled invalid by the United States Supreme Court. This was regarded in the North as perhaps the first step toward elimination of boundaries in the hosiery industry and virtually establishing uniform prices and standards of construction.

Probably the last sectional division of the industry to act was the western membership of the National Association. The action of this body was regarded as making it virtually unanimous that the voluntary pact be adopted. It was estimated that the annual cost of operating the voluntary code would be around $50,000, which of course is very much less than the cost to the trade under the NRA Code.

Mr. Constantine, executive director of the National Association, is said to have told the western meeting that the provision as to 75 per cent of the mills and 80 per cent of the output applies to each of the divisions of the industry and is merely a starting point.

It has appeared, from statements imputed to some of the mills in the smaller class, that pledges to observe the voluntary agreement would not represent 100 per cent of the industry. Necessarily, jealousies crept in under the operation of the NRA code and have not entirely disappeared, so that the new arrangement starts, in this respect, about where the former quits. It is expected, however, that a large percentage of the manufacturers who have not signified adherence to the volunteer agreement will eventually fall in line. Dissatisfaction is attributed to some extent to a suspicion that during operation of the NRA code regulations, production of hosiery was in excess of what it might have been had none of the mills taken advantage of loop

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REPRESENTATIVES IN LEADING TEXTILE CENTERS THROUGHOUT THE WORLD

holes in the then NRA regulations. Whether the contentions of the dissatisfied ones were founded on fact or were mere suspicions, the effect is the same in relation to bringing the hosiery industry into a 100 per cent cohesive body, such as was promised by Julian Armstrong several years ago when he undertook to organize among the full-fashioned mills a price exchange.

It appears to be up to the hosiery manufacturers to prove to the fraternity of buyers for the trade that it is possible under voluntary agreement to balance production with demand and avert many of the ills of the market in the recent past.

Price Condition Chaotic

If July retail prices of hosiery served to promote sales in proportion as consumers were favored—at the expense of manufacturers—the decks should be pretty well cleared for old-fashioned fall trading, particularly, as maintained by some elements in the trade, if there had been underconsumption. Women probably never had been given such a wide open opportunity to replenish wardrobes on a value basis. In fact, first quality silk full-fashioned was available at prices so low that in instances they were looked upon with suspicion that they must be irregulars. Contrary to expectations that, as there was an insatiable demand for price, irregulars would be in demand, manufacturers were fortunate if they found customers willing to take them in at a substantial shading from the customary differential.

Hosiery specialty shops in Philadelphia, in the heart of the fashionable shopping district, featured full-fashioned chiffons, "guaranteed", at 49 cents a pair, after a somewhat less attractive stocking had been on sale at 46. Dexdale ringless were featured in a department store at 67 and 77 cents respectively, while in another establishment Julius Kayser ringless chiffon were on sale at 79 cents, said to be the first time to be offered for less than one dollar. Some stores were advertising 20 per cent reductions in hosiery prices. What were described as close-outs of 51- and 48-gauge were offered to dealers at $5 a dozen and not wanted, because of darker than prevailing shades. Sheer chiffons and service weight were on sale in a leading store for 57 cents for a very high grade stocking with all the talking points, exclusive of ringless. A rival had a price of 56 cents for guaranteed "perfect" ringless. These prices were displayed about the middle of July, after production curtailment was assumed to have been practiced by a very great majority of the full-fashioned mills, some of the leaders in the movement figuring a 50 per cent reduction in their output for around six weeks.

An Eastern Pennsylvania mill favorably situated for extending attractive terms to chain store organizations, complained of difficulty of getting shipping instructions against orders placed in May and June. An executive stated the mill had chain store orders aplenty, but could not persuade the buyers to specify details. There are reasons why the manufacturer should be delivering the goods, principally in the moderate price range, and stated the situation to the buyers. Their excuse for withholding details was an absence of requests from scattered units for shipments. "We cannot detail until we have heard from at least a fair per cent of our stores," it was stated by a buying department in extenuation of holding up deliveries.

The manufacturer in question thought the pretext of the chain organizations for withholding details might be accepted as indicating that it is the policy of buyers generally to make no commitments so long as they may safely be postponed. The chain organization policy in this respect was held by the manufacturer as a reflex of the attitude of merchants in all of the leading retailing centers toward stocks for fall. A few northern manufacturers who have been taking hosiery in the gray from three to six small mills cut down their requirements in June, and to the middle of July had not been calling in more than a half of their usual takings. The effect of this was seen in the Philadelphia sector last month in the idleness of some of the concerns selling in the gray or operating on commission fo, larger mills having facilities for dyeing and finishing on a large scale.

A Statistical Picture

Statistics tabulated by the U. S. Department of Commerce from reports of 365 identical manufacturers of hosiery representing 433 mills present no picture of any material curtailment in May from the output of April. A slight increase in production in May was more than balanced by increases in orders booked and net shipments during the month, unfilled orders at the end of the month, and a slight drop in stocks in mills. A satisfactory ratio seems to have been maintained in practically every division and general type of hosiery. Although prices in most lines were out of line with cost of production, there was indicated a nearer approach to a fair balance of output and outgo than many manufacturers permitted themselves to believe existed.

Making comparison with May 1934, it would seem that the situation in May 1935 was not quite so alarming as buyers for the trade pictured it to sellers. The Department of Commerce tabulation of 328 identical manufacturers representing 388 mills shows an increase in net shipments in May this year, but decreases in unfilled orders at the end of the month and a corresponding increase in stocks remaining in mills. A favorable feature of the compilation was a decrease of more than 20 per cent cancellations, which no doubt could be attributed to retailers buying closer to their needs. Juvenile lines make a good showing in two respects—a material reduction in quantities knitted and a gain in orders booked. The same classification makes an unsatisfactory showing in decreases in net shipments, and unfilled orders and stocks in mills at the end of May this year.

Production of women's full-fashioned in May this year was somewhat in excess of the quantities in the corresponding month of 1934 and there was a corresponding increase in orders booked, while in net shipments and unfilled orders the showing is against the mills, as is the case in relation to stocks at the month end. In women's seamless, output was less, while net shipments made a substantial increase. Unfilled orders fell off by around 290,000 dozens. Stocks in mills at the month-end fell by 80,000 dozens.

Men's seamless numbers declined around 100,000 dozens in output in May, compared with the corresponding month of last year and rose by 200,000 dozens in orders booked, net shipments increasing to an extent matching output. On the unfavorable side of the statistical showing is a decline of approximately 1,074,933 dozens unfilled orders and an increase of more than a half million dozens in stocks in mills at the end of May this year. In infants' lines the fluctuations from May last year to the same month of 1935 were unimportant, production and shipments falling off. The unfavorable showing this year is mainly in a drop in unfilled orders and an increase of stocks in mills.

The outstanding showing in the statistical bulletin of the National Association of Hosiery Manufacturers accounts for shipments of 830,000 dozens more and production 930,000 dozens less in the first five months of 1935 compared with the corresponding period of 1934. The month-end inventories were around 290,000 dozens in excess in May this year of the quantity in 1934. Data of women's full-fashioned and seamless hosiery are omitted from the Association's statistical bulletin for May.

Tests on "Ringless" Suits Approaching

Legal fireworks are expected to be exploding in the trial of suits for alleged infringements of the Kaufman patent for producing ringless hosiery in time for the injection of broader interest in the ringless type of stocking for fall merchandising. Elaborate preparations are under way by the Textile Patents Corp. for procuring adjudications of the patent sometime in October or November, in order that steps may be taken to put prices on a firm basis and keep them there, and reasonable profits from production and marketing may be established, and maintained. There is such a disparity in the advertised prices of ringless hosiery by various retailing establishments, that it appeared to some interests that prices for the future will have been established before the Textile Patents Corp., controlling the rights under the Kaufman patent, will be able to effectually set minimum prices for dealers. This possibility can be traced in part to the fact there is a division among manufacturers on the question of the expediency of several provisions in the agreement under which manufacturers are licensed to produce and sell ringless hosiery made with the Kaufman patented three-carrier attachment. The stand of this division has been of more serious import because of the fact so many leading mill owners were arrayed on opposing sides. This in itself was sufficient to raise in the minds of buyers for the trade a question as to the success of the Textile Patents Corp. in carrying out its program as described in its agreements with licensee. Some dealers

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took comfort from the division of manufacturer interest, and it became notorious that prices for true ringless showed a wide disparity in many instances. The situation became more confusing by reason, probably, of the fact that since the formation of the outer patent pool as distinguished from the Textile Patents Corp., several patents have been issued on striping attachments, modified for producing ringless stockings. An executive of the Textile Patents Corp. points out, however, that none of the mechanical patents has any bearing on the fabric and the method of making it, as covered by the Kaufman patent, which, it is declared, is the only patent issued for making full-fashioned ringless hosiery by the three-carrier method.

It is stated officially in behalf of the Textile Patents Corporation that any broad claim to be issued for an attachment for producing ringless hosiery will be placed in interference in the United States Patent Office. Patents recently issued for ringless attachments, it is cited, cover specific improvements and provide for only limited protection.

It is pointed out in a report issued quite recently of a study of hours, earnings, in the mills of the Full-Fashioned Hosiery Manufacturers of America, Inc., that more leggers and footers are busy on the ringless type of stocking than on the single-carrier machines. Hourly earnings of leggers on 42-gauge three-carrier equipment are reported in the study as 11 per cent higher than on the single-carrier of the same gauge, and 8.5 per cent higher on 45-gauge.

Analysis Reveals Extent of "Ringless" Operation

This is the first survey of the full-fashioned hosiery industry to present comparative figures as to three-carrier and single-carrier legger operation. In a study of 837 employes on 39-gauge machines, only three operated the three-carrier system, while of 1,418 employes on 42-gauge machines, 512 were employed on the three-carrier. The popular gauge for the three-carrier product is 45. Of 813 employes on 45-gauge machines, 671 were producing ringless hosiery on three-carrier attachments. Of the total machines of a varying gauge, 1,329 operatives were employed on three-carrier and 1,822 on single-carrier equipment, and of 960 footers, 399 were engaged on three-carrier and 561 on single-carrier machines. The average hourly product of 42-gauge machines is 3.1 per cent greater from the three-carrier than from single-carrier, as to 24-section leggers, but is 5.3 and 6.1 per cent less, respectively, from 18-section and 20-section. In 45-gauge goods, the three-carrier product is 2.5 per cent greater from 18-section leggers, but 6.5 and 18 per cent less respectively from 20-section and 24-section leggers. Three times as many ingrain workers were employed on three-carrier machines as on single-carrier equipment.

The study was conducted by Dr. George W. Taylor of the industrial research department of the University of Pennsylvania, who states in introductory remarks that it is based on data transcribed directly from plant payrolls by investigators from the university research department.

Underwear Upset by Processing Tax Decision

The decision of the U. S. Circuit Court of Appeals handed down in Boston on July 16, declaring the cotton processing tax unconstitutional, created a stir in underwear circles the like of which probably had not been experienced in many years. Heavy weight underwear was bought in very restricted quantities early in the year, the purchases in many instances being described as representing little more than samples. Since then jobbers have been hesitating to place their fall orders, uncertain as to the fate of the processing tax, the decision by the Circuit Court of Appeals in Boston coming at a time when the effect is to leave jobbers more hesitant than ever to protect their stocks for fall, as stated by several of the leading buyers for wholesale interests.

Jobbers, it was pointed out, should be receiving deliveries in September. For the same reason that they deferred making commitments, manufacturers in many instances made up no stocks of moment for delivery in the event a rush occurs. The underwear trade, therefore, faces a possible shortage of ready-to-deliver goods. In the circumstances it was thought by some of the more important distributors that prices generally would hold, especially as to representative lines. Lack of stocks in mills and the possibility of an early fall and cold winter suggests a scarcity

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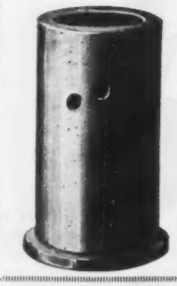

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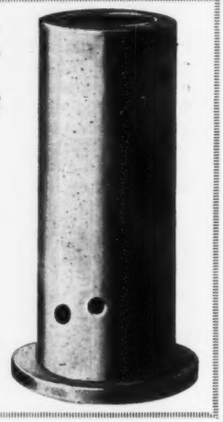

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of heavy weights at a critical moment as by no means improbable.

In addition to climatic conditions and the general hesitancy to put no underwear in stock until very close to the period when it shall be needed for distribution, is the certainty of the Government taking large quantities of cotton underwear, contract specifications placing some mills under very great pressure. Thus it is suggested that with wholesalers disposed to "play safe" so long as they do not have firm orders from their trade, the retailer would appear to be in danger of having very scant stocks in event of climatic changes favoring the market.

The point is made that manufacturers of heavyweight underwear who convert from raw cotton may be in an advantageous position pending the removal of doubt as to the eventual disposition of the processing tax case by the U. S. Supreme Court, as it is assumed an appeal from the Boston decision will be taken to the court of last resort. The situation therefore is not improved for the distributor of the finished goods by the ruling of the Court of Appeals. Obviously, belief is stronger than ever that the tax will be discontinued, but primary interests are not taking very much risk, leaving speculation, as to the tax, to the ultimate buyer, simply "passing the buck", which is common in periods of uncertainty.

The decision in the tax case is not expected to have any very great bearing on medium weight underwear, as sales have been slow and the risk is lighter by reason of the lower values, as compared with heavyweight.

The present season's fad in men's lightweight underwear has had the effect of materially diminishing sales of the cut and sewn. This is attributed mainly to the popularity of the very short shorts.

Women's cotton underwear has been contracted for in very conservative fashion, commitments often being limited to smallest possible quantities. The underwear market for the remainder of 1935 will be dependent upon climatic conditions to a greater extent than in the history of the trade, say some of the older operators in the primary markets. They declare they have never experienced so perplexing a situation on the eve of necessary buying for fall delivery.

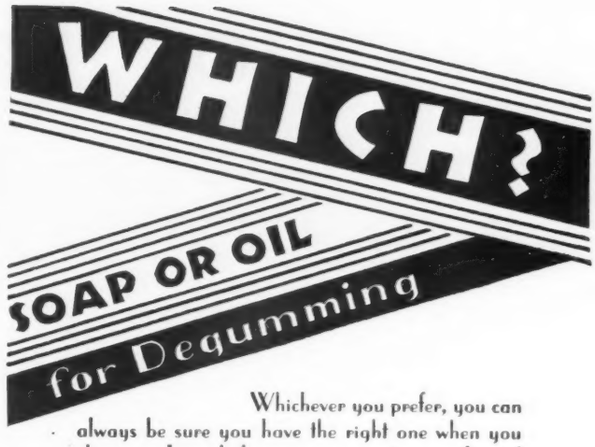
Outerwear Mills Need Business

Manufacturers of knitted outerwear as a general proposition were very much in need of business in July. They were confronted with possibly higher prices for yarn, yet were reluctant to contract for their fall requirements, because of the tardiness of distributors in the matter of making commitments for goods that should be going to wholesalers certainly not later than the latter part of September. Manufacturers are interested particularly in men's, women's and boys' sweaters. Infants' goods are being pretty well bought up, while in juvenile and men's and women's lines there has been a near approach to a standstill. Owing to the experience of some manufacturers with bathing suits for the 1935 season, there is a disposition to proceed slowly as to sweaters.

Some of the manufacturers of women's novelty bathing suits are left with considerable stocks, particularly of low-priced quality. These manufacturers, it is said by some of the small retailers, did not gauge their seasons properly. Instead of protecting their small trade with ready to deliver goods until later in July, they unloaded some of the left-overs among some of the department stores, which staged promotion sales at low prices, depriving numbers of small dealers of a considerable part of their late season business. It appears that mills selling direct to retailers have fared much worse in the matter of left over stocks than those distributing through jobbers. Some of the latter are known to have had a fairly good season, managing to get shipping instructions before the marked down sales of surplus goods by department stores took place.

Buck Liquidates Seamless; May Move Full-Fashioned South

THE Thomas W. Buck Hosiery Co., Philadelphia, Pa., has taken steps for liquidation of its seamless plant, established in 1893, one of the few remaining seamless mills in Philadelphia producing women's hosiery. There is talk of removing the company's full-fashioned plant to a southern site. This has been given consideration, it was stated by a spokesman for the management, but no action of a definite character has been taken.



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REVIEW OF THE YARN MARKET

PHILADELPHIA, JULY 16, 1935.—*The decision of the Federal Court of Appeals in Boston today declaring unconstitutional the cotton processing tax it was believed would have no effect in itself, on prices for cotton yarns. But it was felt by some of the more important yarn merchants that the effect of the ruling would be to retard buying by manufacturers and cause commitments closer to needs than in recent weeks. It was regarded, after the decision came out, a safer bet that the tax eventually be discontinued.*

Philadelphia, Pa., July 16, 1935.

SELDOM have cotton yarn prices fluctuated in as narrow a range as in the first half of 1935. And seldom has steadiness prevailed for so long a time. The only other outstanding phase of the situation during these months was the light poundage of yarns, all classes, taken over by manufacturers for civilian uses. The market's chief support was in the quantities of yarn required by manufacturers of stockings, underwear and other cotton goods having contracts for Army, Navy and Civilian Conservation Corps supplies.

What might have resulted in yarn prices but for the demand from mills filling government contracts is a matter for conjecture. Probably the absence of this business would have made little difference in the cost of yarn for civilian goods, for manufacturers have not been in a buying mood for many weeks, and the fact that market values underwent practically no recession would seem to indicate that at last an irreducible minimum had been reached in the quotations of spinners.

There have been relatively few contracts placed by manufacturers for civilian goods, and doubtless very few could have been placed at prices reported having been accepted in several instances. A contract for well above 100,000 pounds of carded and single combed was taken on what is said to have been a low bid of a large Philadelphia house. It was offered to several houses, by a Pennsylvania underwear manufacturer whose business is invariably much sought after. Ordinarily in recent months when a contract of this size was offered there was an eagerness to land it, and prices well below ruling quotations are said to have been given selective accounts. The business is especially attractive when the contract calls for some one given count. It therefore has been not surprising, when carded yarns of average good quality were being quoted on a basis of 26½ cents for 10s single on cones, that the successful bidder had at least shaded that figure.

As it was assumed the underwear manufacturer's contract for around 120,000 pounds of yarn which was announced July 15 was bought for immediate consumption, since there was to be had no wide concession in the way of price, it was felt the time had arrived when most of the underwear makers would find it necessary to do some buying. In fact, there had been placed early in July and late in June orders for sizable lots, which certainly could not have been suspected as representing speculation. Underwear yarns had been quiet, in contrast to weaving numbers, but recently it appeared the pendulum was swinging to knitting yarns.

Aside from some few upstate Pennsylvania cotton seamless hosiery mills, there are not many in the Philadelphia area that consume material weights of either combed or carded, and these few have not been under pressure for deliveries of stockings in recent months. The underwear mills are the better outlet for cotton yarns—carded, combed and mercerized. Sweater manufacturers are using fair weights in combination with worsted.

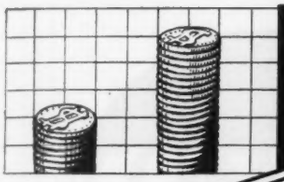
Cotton looms in the Philadelphia area have not been conspicuous for activity, but for a time were consuming more yarn, relatively, than knitters. Steadiness in weaving yarns was not disturbed by lack of orders, 30s/2 warps moving at around 35½ cents, and so on through the range. It seems no recent orders were large enough to influence spinners to deviate much from this figure. Some sales were effected at 35. Plush mills recently were taking in about as much yarn, relatively, as any division of the cotton weaving industry, and this has not meant a great deal for the yarn trade.

Shipments of single combed peeler yarns have been running very close to production since the beginning of 1935, sales ranging from around 75 to 86 per cent of production. In only one week, in April, did sales exceed production, amounting on that occasion to 105 per cent. June was a slow month in single combed peeler yarns, a statistical report showing weekly sales of around 20 per cent of production, one week being credited with 45 per cent.

Weekly production of single combed yarns has been running about 350,000 to around 450,000 pounds since April 1. Output of ply yarns has been on the decline, with sales recently ranging from 40 to 55 per cent of production.

Shipments of worsted yarns have been increasing recently, but are principally against old orders at prices 10 to 20 cents a pound below current quotations. Spinners find they sold too much yarn just before the rise which had its start in May, and now new business is in light volume. It appears around the middle of July that by the early part of August there ought to be fairly good movement of both knitting and weaving yarns. Prices are relatively low, from the standpoint of wool parity, and the wool market in July shows considerable strength, due to heavy consumption in government contracts.

Shipments of mercerized yarns dropped off materially during the curtailment of full-fashioned hosiery production, and showed little improvement in July. Robert C. Boger, president of Boger & Crawford, mercerizers and spinners, said that while his company was in the market for orders it was willing to get along for a time without contracts, as a probable escape from headaches later. His company was called upon by customers recently to define precisely what course it would pursue in relation to rebating on unfilled orders in the event of the processing tax being discontinued or reduced. Uncertainty over the fate of the processing tax is given as the major reason for slack conditions in the yarn trade.



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for Heavily Oiled Rayon and Wool

Tailor-fitted

TEXTILE SILICATE

STAR BRAND

TAKE the purest raw materials, our manufacturing skill as silicate of soda specialists plus the continual rigid testing by our chemists. Result:—the most dependable textile silicate known .... Star Brand.

When objectionable impurities of ordinary silicates might cause hundreds of dollars' damage, mill men appreciate the value of the right silicate. Get current quotations on sparkling, clear Star Brand Silicate of Soda.

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General Offices and Laboratory: 125 S. Third St., Philadelphia.
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IMPROVE RESULTS - LOWER COSTS

PRICES REDUCED

APPROXIMATELY

20%

YOU CAN NOW USE

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The FOUR-IN-ONE PAY ENVELOPE
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Over 98% of firms who once try the Four-In-One re-order. It is—

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Established Jan. 1, 1895

Works and Office, Atlantic, Mass.

High Grade Castor Oil Products

Sulphonated-Saponified

Soluble Oil **Para Soap Oil**
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PENTRALYN,

a superior assistant for Beam, Spool, Bobbin and Package Dyeing.

Bleach Softener CSO, Finishing Sizings and Softeners

VICTROLYN,

the economical assistant in warp sizing. Penetrating, Lubricating and wholly efficient.

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FOR
MERCERIZING

Solvay Caustic Soda is made from Soda Ash manufactured by the Solvay Process. The same high degree of technical supervision and the same scientific methods are exercised in producing Solvay Caustic Soda that are followed in making Solvay Soda Ash—the standard since 1881.

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Alkalies and Chemical Products Manufactured by The Solvay Process Company

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To Assure Beautiful Dull Finish, Spot-Proof Water Repelent Merchandise--Use

HYDROXY K7

THE BEST ONE BATH WATERPROOF OBTAINABLE

You can get all of these qualities with HYDROXY K 7. Ideal for cotton, also for Rayon, Acetate, Wool and Piece goods. Also for yarns. Hydroxy K 7 is preferred because it makes a stable emulsion.

IMPROVE YOUR PEROXIDE BLEACH

USE PEROXOL. It cleanses the fabric and opens the fibres so as to permit the bleach liquor to penetrate. It thereby produces a better and more even white. Add Peroxol direct to the Bleach Bath or use it in the wetting out bath before bleaching.

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Use HYDROXY PENETRATORS. They have been developed and are used extensively for penetration and level dyeing in Raw Stock, Beam Dyeing, Package Dyeing, Skein, Hosiery and Piece Dyeing. A small amount in the dye bath saves time and labor. Ask us about our popular low-priced KALPINOL 52 A Penetrator for general wetting out purposes.

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BECCO

TECHNICAL SERVICE

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An excellent, willing combination for every bleacher

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BUFFALO, NEW YORK
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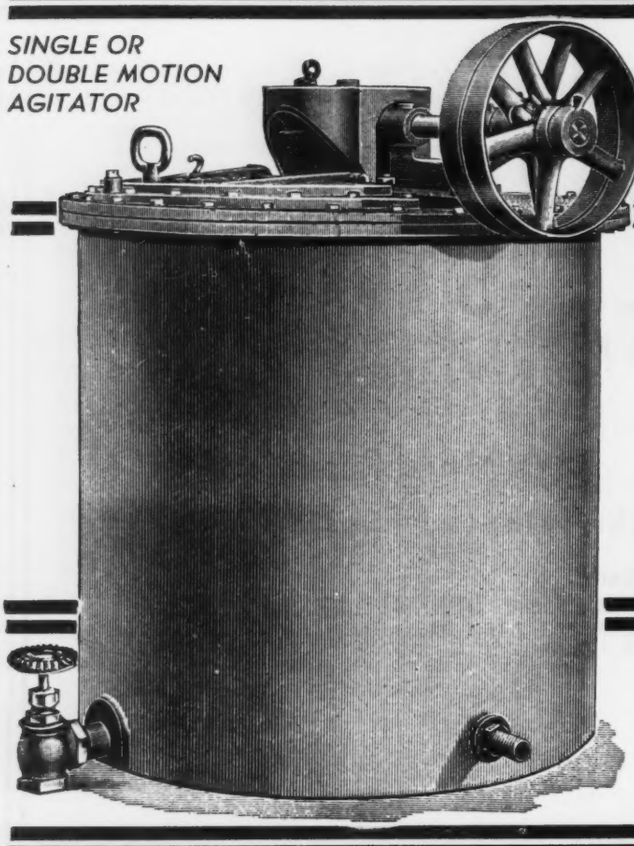
SINGLE OR DOUBLE MOTION AGITATOR



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MANY of the objectionable features found in other size kettles have been eliminated in the improved design of GOLDENS' SIZE KETTLES. This design incorporates ideas of expert practical mill men. The body is cast solid of the highest quality grey iron. All fixtures are fitted in workmanlike manner with machined joints. Our standard sizes and capacities are as follows:

GALLON CAPACITY	HEIGHT	DIAMETER
110	32"	32"
160	36"	36"
250	42"	42"
360	48"	48"

For mixing, Golden's Kettles can be furnished with stirrers, propellers or paddles, or combination of same. For heating, Steam Jacketed Kettles can be furnished, or with one or more layers of brass coils, closed or perforated.

Details gladly furnished on request.

GOLDENS' FOUNDRY & MACHINE CO.
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Also manufacturers of

Hangers
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Shaft Couplings
Cast Iron Tanks
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Ball Bearing Transmission Equipment
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Fully 25% of All Cotton Textile Spindles in the United States are Operated on the Loper System.

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INDUSTRIAL ENGINEERS

Specialists in Textile Costs Over 22 Years
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LAPPINGS and BLANKETS for PRINTING MACHINES
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For Best results in Sanforizing use
KENYON'S ENDLESS WOOLEN BLANKETS

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COTTON
ATLANTA, GEORGIA

WASHINGTON KNEW ITS VALUE

Had not George Washington appreciated the value of cooperation on the part of his men and generals, and had he not known how to get it, the American Revolution would have been a dismal failure.

Success in modern industrial enterprises also necessitates a high degree of cooperation. Furthermore the modern conception of cooperation goes beyond company limits and recognizes a mutuality of interest between buyer and seller. The exchange of products for money is incidental. The ultimate goal is maximum utility and satisfaction for the user.

Hence the growth of service, which is merely another name for cooperation between buyer and seller.

A-H Service to users of textile chemicals is rendered by a staff of specially trained chemists assisted by a completely equipped, modern laboratory and a company contact of 120 years with all branches of the textile industry.

A-H chemists will consult with you, free of charge, in connection with new sizing, finishing or printing problems, or will check with you on the efficiency of routine methods.

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Sizing and Finishing Gums and Compounds • Soluble Gums • Softeners • Soluble Oils • Tallow • Waxes • Soaps • Flour • Dextrines • Starches • Pigment Colors and Lakes • Ammonia • Acids • Blue Vitriol • Borax • Bichromate of Soda • Bichromate of Potash • Liquid Chlorine • Chloride of Lime • Caustic Soda (solid and flaked)

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Established 1815. Plant at Dighton, Mass.

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New York • Boston • Philadelphia • Charlotte

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Even today some mills lose production in summer because they follow the notion "you can't start new rings in hot weather." This was true years ago when humidity was not so well controlled and rings did not have their present high polish.

Today we can cite you the experience of scores of our customers which shows you that you CAN install new DIAMOND FINISH rings successfully in the hottest weather.

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Makers of Spinning and Twister Rings since 1873

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CHEAPLY WOUND

EASILY PENETRATED
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***are* ABBOTT WOUND**

Specifications for all types of
DYE PACKAGES
There's a reason!
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STANDARD RING TRAVELERS
BEST MEET THE SPECIFIC REQUIREMENTS FOR SPINNING AND TWISTING

THE BOWEN PATENTED BEVEL EDGE TRAVELER
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FOR
EVEN SPINNING AND TWISTING
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FOR
SILK, RAYON AND FINE WORSTED YARNS. A TRAVELER THAT WILL NOT UNTHREAD. ESPECIALLY DESIGNED FOR LUBRICATING RINGS.

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Palmer Blankets

F. C. HUYCK & SONS
KENWOOD MILLS
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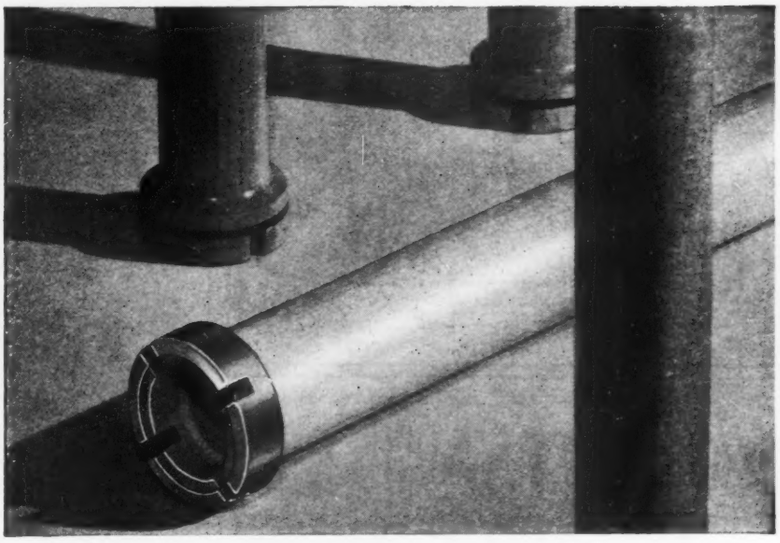
Arguto NON-METALLIC

20 years without a drink—

"First bought 'Arguto' bearings 25 years ago . . . still buy them because they're alright."
—unsolicited testimonial

ARGUTO OILLESS BEARING CO.
Wayne Junction, Philadelphia, Pa.



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BOBBINS

ALL U S card room bobbins are made from selected stock, scientifically dried and finished smooth inside and out by our special moisture-resisting process.

Ask our nearest representative to submit samples.

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Branches: Providence, R. I.; Lawrence, Mass.; Philadelphia, Pa.; Monticello, Ga.; Charlotte, N. C.; Greenville, S. C.; Johnson City, Tenn.
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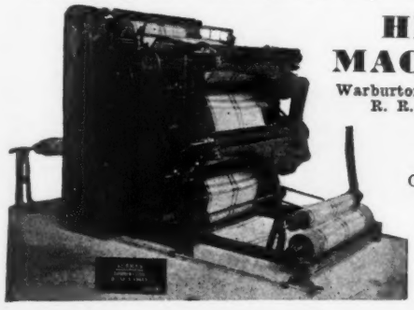
CONVERTERS KNOW WHAT "SHEARED BY HERMAS" MEANS

The use of Hermas combination brush and shears has become so general that to use old-time clothroom methods is a distinct handicap for a producer.

For Uniform Results

There is no method that equals the output of these automatic brush and shears. They shear within a foot of seams—get all the strings and nibs—both sides of the goods—running 60 to 90 yards to the minute.

Interesting facts and figures are yours for the asking.



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MINEROL • • •
Gives Cotton the Needful LUBRICATION That Nature left out.

MINEROL CONDITIONING
of cotton fibres by the

BRETON MINEROL PROCESS PATENTED

Aids normal moisture regain during manufacturing operations, making the fibres more supple, neutralizing static, preventing kinking.

MINEROL TREATMENTS
Give better sanitary conditions, reduce dust and "fly" lessen the fire hazard • less slugs • less ends down.

SPRAY MINEROL
for better reactions to Dyeing, Bleaching and Mercerizing.

BORNE SCRYMSER COMPANY
Originators of the BRETON MINEROL PROCESS for CONDITIONING COTTON
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Whether the Weather's **Polar or Solar**

It's Comfortable at the Biltmore

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Here you may relax and rest in COOL COMFORT. Each room has an outside exposure, electric fan, circulating ice water, and private bath.

In the evening, weather permitting, you may dine outdoors on our cool Terrace beneath the stars. You'll enjoy our excellent food, too, and withal, your stay in Atlanta will be most pleasant!

★

Single rooms, $3, $4, $5; Double, $4.50 to $7.

MAIN DINING ROOM:		COFFEE SHOP:	
Breakfast	from 40c;	Breakfast	from 30c;
Luncheon	from $1.00;	Luncheon	from 40c;
Dinner	from $1.50;	Dinner	from 65c.
Also a la carte		Also a la carte	

Atlanta

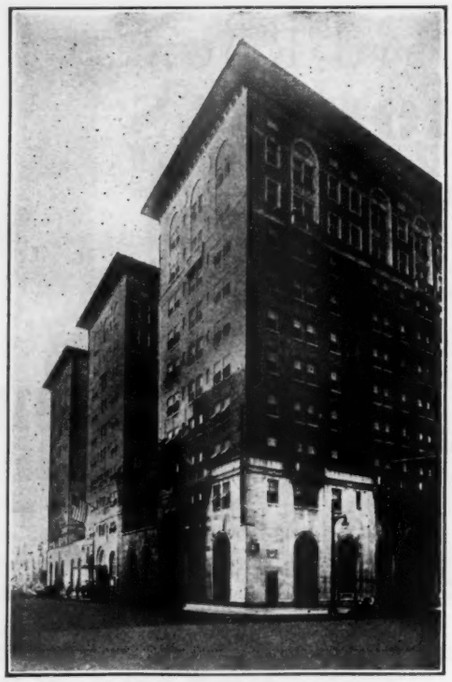
BILTMORE

★

HOTEL

"The South's Supreme Hotel"

COMING TO PHILADELPHIA?



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When you visit Philadelphia make **HOTEL PENNSYLVANIA** your home . . . You will find its location convenient—ten minutes to the business section . . . away from congestion and noise. . . . Known the world over for its hospitality . . . food that satisfies.

600 ROOMS, Each With Bath
From $2.50 Single, $4.00 Double

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39th and CHESTNUT STREETS
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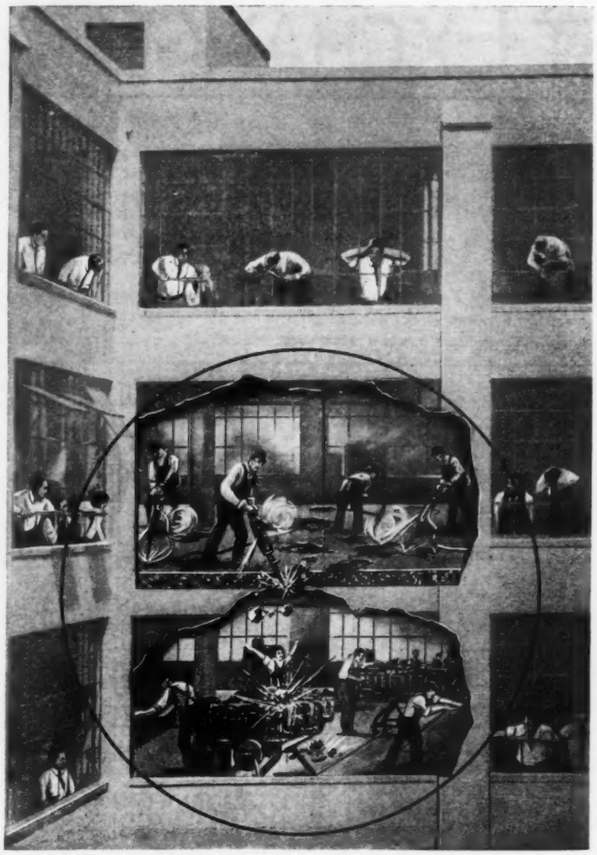

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To repair or resurface ruts and holes in your floors, platforms and driveways
Used on concrete, wood and all types of industrial floors.
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Easy to walk and stand on
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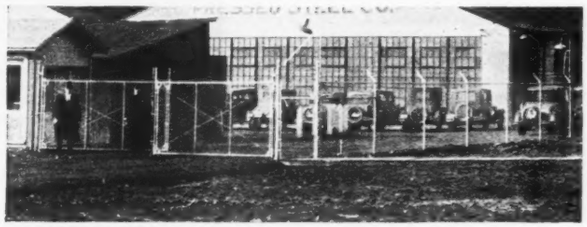

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Robertson Chain Link Fencing provides utmost possible protection to industrial plants, day and night. Durable, efficient, economical.

Write for catalog and prices

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CINCINNATI
CHAIN LINK FENCING

TRADING POST EXCHANGE

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$5,000,000.00 Plant

LYONS PIECE DYE WORKS

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SPECIAL ITEMS

5—Rice, Barton & Fales Printing Machines, 10-color, 8-color and 5-color; 42", 48" and 60".
2—18' Butterworth Agers.
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2—V. V. and King & Gerber Singeing Machines.
1—12x12 Ingersoll Rand Compressor, ER-1, motor driven by 75 hp. AC motor.
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Direct all inquiries to our Paterson office

CONSOLIDATED PRODUCTS COMPANY, Inc.

Boulevard & Fifth Ave.
PATERSON, N. J.

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SAVING your time and expenses by offering only best and buying direct from source.

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Probably you, like many other mills, have some equipment which you have taken out or are thinking of taking out and replacing with new equipment.

Why not dispose of this second-hand machinery at a profit? COTTON is read by thousands of cotton mills that are hardly touched by Northern journals.

You Can Sell Your Second-Hand Equipment

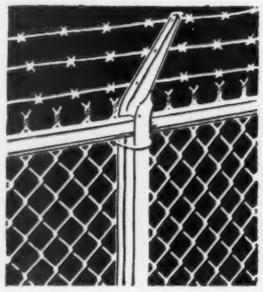
to these mills through advertising in the Classified Advertising Section of COTTON. Such advertising produces results at small cost—why not try it out and get that second-hand equipment off your hands in a profitable way? Tell us what you have for sale and let us insert an advertisement.

COTTON

GRANT BLDG. ATLANTA, GA.

Stewart FENCES

Give you ALL the usual features PLUS



this important EXCLUSIVE FEATURE

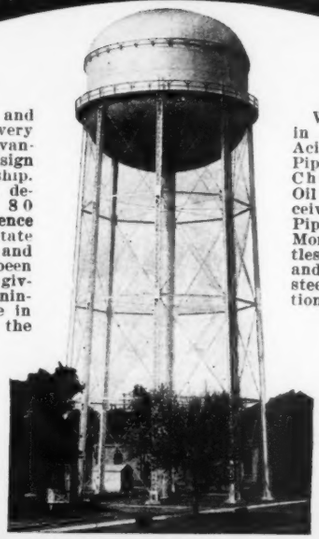
It is significant that leading fence manufacturers have standardized on Open-Section Beam line posts in Chain Link Fence Construction. It is further significant that STEWART is the ONLY manufacturer that has succeeded in extending "Beam" construction to top rail and terminal post use as well as for line posts.

Shown is close-up view of our Oval-Back I-Beam line post with integral, tapered (one-piece) extension arm. An unbreakable unit. The heaviest and strongest Chain Link Fence Post on the market.

Literature and name of local representative upon request.

The STEWART IRON WORKS CO., Inc.
106 Stewart Block - - - Cincinnati, O.

COLE TANKS TOWERS



Cole Tanks and Towers offer very distinctive advantages in both design and workmanship. They have been developed **over 80 years of experience** to the highest state of efficiency and hundreds have been erected and are giving perfect, uninterrupted service in every section of the country.

We also specialize in Boilers, Kiers, Acid Tanks, Stand Pipes, Smoke Stacks, Chemical Vessels, Oil Tanks, Air Receivers, Welded Pipes and Tanks, Monel Tanks, Kettles, Storage Bins and other forms of steel plate construction.

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Let us quote you prices when you are in the market for tanks, towers or other steel products.

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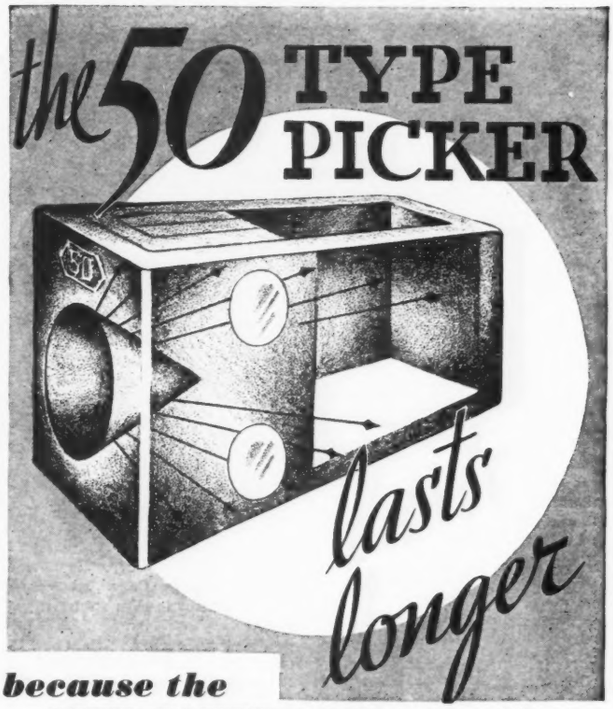
the 50 TYPE PICKER



lasts longer

***because the* LIFE SAVER HOLE distributes the shock....**

The shape of the shuttle point hole shouldn't be left to chance. 50 Type Pickers (patented), alone, have the hole already cut by machines to the shape that will distribute the blow to all parts of the picker—so they last longer.

The *Life Saver* hole is balanced perfectly between the rivets—it's the right depth to bring the force down *inside* where it can't break the shell. And it allows a rocking motion which eases the work of the picker.

Easiest to Put On

Loom fixers prefer the 50 Type Picker because it is trimmed to fit the loom. The hole is already cut. No danger of knife slippage. Driving it on the stick to the proper level is all there is to do.

50 Type Pickers are made of leather produced primarily for picker use. They are processed from selected cuts, so the strength of the leather is uniform.

With Telegraphic Speed

Order 50 Type Pickers from the Graton & Knight distributor nearest you. Your local Western Union office will give you his name and telephone number without charge.

Learn how to get the most from the Bonus Zone. See our advertisement on Research Belting in TEXTILE WORLD

GRATON AND KNIGHT *Graton + Knight's*

50 TYPE PICKER

THE PICKER WITH THE LIFE · SAVER HOLE

THE GRATON & KNIGHT CO.
WORCESTER, MASS.

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